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=> fil heap  
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FILE COVERS 1907 - 12 Jul 2011 VOL 155 ISS 3  
FILE LAST UPDATED: 11 Jul 2011 (20110711/ED)  
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Apr 2011  
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Apr 2011

HCAplus now includes complete International Patent Classification (IPC)  
reclassification data for the first quarter of 2011.

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This file contains CAS Registry Numbers for easy and accurate  
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=&gt; d que 142

L2 16 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON (12597-69-2/BI OR 1303-00-0/BI OR 22398-80-7/BI OR 298704-23-1/BI OR 7429-90-5/BI OR 7439-89-6/BI OR 7439-96-5/BI OR 7439-98-7/BI OR 7440-06-4/BI OR 7440-22-4/BI OR 7440-32-6/BI OR 7440-33-7/BI OR 7440-47-3/BI OR 7440-57-5/BI OR 7440-62-2/BI OR 7440-67-7/BI)

L3 14 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L2 AND M/ELS

L4 2135970 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L3

L5 14733 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON ("SELF-ASSEMBLED MONOLAYER"+PFT,NT/CT OR "SELF-ASSEMBLED MONOLAYERS"+PFT,NT/CT)

L6 8343 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L4 AND L5

L8 1158 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L6 AND CPS/RL

L9 12 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L8 AND ANCHOR?(5A) SURFACE?

L11 QUE SPE=ON ABB=ON PLU=ON SELF ASSEMBLED MONOLAYER? OR SAM

L12 243 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L11 AND ANCHOR?(5A) SURFACE?

L13 QUE SPE=ON ABB=ON PLU=ON (THERMAL? OR TEMP? OR HEAT?) (3A) TREAT?

L14 155 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L5 AND ANCHOR?(5A) SURFACE?

L15 243 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L12 OR L14

L17 QUE SPE=ON ABB=ON PLU=ON POLYMER? OR MONOMER? OR RESIN? OR POLYMORPHIC? OR PLASTIC? OR THERMOPLAST? OR RUBBER?

L18 53 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L15 AND L17

L19 76819 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON LITHOGRAPHY+PFT,NT/CT

L20 5 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L18 AND L19

L21 5 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L15 AND L20

L22 QUE SPE=ON ABB=ON PLU=ON PATTERN? OR DESIGN?

L23 QUE SPE=ON ABB=ON PLU=ON SUBSTRAT? OR SURFACE? OR BASE? OR SUBSTRUCT? OR UNDERSTRUCT? OR UNDERLAY? OR FOUNDATION? OR PANE? OR DISK? OR DISC# OR WAFER?

L24 40 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L15 AND L22 AND L23

L25 15 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L24 AND SURFACE?/SC, SX

L26 108 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L15 AND SURFACE?/SC, SX

L27 108 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L26 AND L23

L28 3 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L27 AND L19

L29 20 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L27 AND CPS/RL

L30 37 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L9 OR (L20 OR L21) OR L25 OR L28 OR L29

L31 30 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L30 AND (1840-2006) /PRY,AY,PY

L32 8 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L17 AND L31

L33 215 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON (L5 OR L11) AND L13

L34 58 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L33 AND L17

L35 54 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L34 AND L23

L36 QUE SPE=ON ABB=ON PLU=ON (FIRST OR 1ST OR 1ST OR PRIMARY? OR ONE) (3A) STRUCTUR?

L37 QUE SPE=ON ABB=ON PLU=ON (SECOND? OR 2ND OR 2ND OR DOUBBLE? OR TWO OR NEXT) (3A) STRUCTUR?

L38 1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L35 AND L36 AND

L37  
 L39 2 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L35 AND (L36 OR L37)  
 L40 31 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L31 OR L32 OR L38 OR L39  
 L41 1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L40 AND ALICYCLIC?  
 L42 31 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L40 OR L41

=> fil wpix

FILE 'WPIX' ENTERED AT 16:14:49 ON 12 JUL 2011  
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FILE LAST UPDATED: 8 JUL 2011 <20110708/UP>  
 MOST RECENT UPDATE: 201143 <201143/DW>  
 DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE  
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>>> IPC, European Classifications (ECLA and ICO), US National Classifications and Japanese Classifications (F-Terms and FI-Terms) have been updated with reclassifications to mid of March 2011.  
 No update date (UP) has been created for the reclassified documents, but they can be identified by the reclassified specific update codes (see HELP CLA for details) <<<

>>> FOR THE LATEST DERWENT WORLD PATENTS INDEX (DWPI)  
 STN USER DOCUMENTATION, PLEASE VISIT:  
[http://www.stn-international.com/stn\\_dwpi.html](http://www.stn-international.com/stn_dwpi.html) <<<

>>> HELP for European Patent Classifications see HELP ECLA, HELP ICO <<<

>>> New EPC/ICO thesauri now available - see HELP Thesaurus, HELP RCode <<<

=> d que 163

L11 QUE SPE=ON ABB=ON PLU=ON SELF ASSEMBLED MONOLAYER? OR SAM  
 L13 QUE SPE=ON ABB=ON PLU=ON (THERMAL? OR TEMP? OR HEAT?) (3A)TREAT?  
 L17 QUE SPE=ON ABB=ON PLU=ON POLYMER? OR MONOMER? OR RESIN? OR POLYMORPHIC? OR PLASTIC? OR THERMOPLAST? OR RUBBER?  
 L23 QUE SPE=ON ABB=ON PLU=ON SUBSTRAT? OR SURFACE? OR BASE# OR SUBSTRUCT? OR UNDERSTRUCT? OR UNDERLAY? OR FOUNDATION? OR PANE? OR DISK? OR DISC# OR WAFER?  
 L36 QUE SPE=ON ABB=ON PLU=ON (FIRST OR 1ST OR 1ST OR PRIMARY? OR ONE) (3A)STRUCTUR?  
 L37 QUE SPE=ON ABB=ON PLU=ON (SECOND? OR 2ND OR 2ND OR DOUBLE? OR TWO OR NEXT) (3A)STRUCTUR?  
 L44 1674 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L11(L) L23  
 L45 105 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L44 AND B05D0001?/IPC  
 L46 4 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L45 AND SURFACE MODIF?  
 L47 1 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L45 AND L36 AND L37  
 L48 1 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L45 AND L13  
 L49 66 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L45 AND L17  
 L50 1 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L49 AND ALICYCLIC?  
 L51 1 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L45 AND ANCHOR? (5A) SURFACE?

L52 5 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L45 AND ANCHOR?  
 L53 1 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L45 AND POLYMORPHIC?  
 L54 1 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L45 AND (POLYMORPHIC?  
 OR POLY MORPHIC?)  
 L55 9 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON (L46 OR L47 OR L48)  
 OR (L50 OR L51 OR L52 OR L53 OR L54)  
 L56 38 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L44 AND L36  
 L57 26 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L44 AND L37  
 L58 52 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON (L56 OR L57)  
 L59 5 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L58 AND SURFAC?(3A)MO  
 DIF?  
 L60 4 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L58 AND B05D00017/IPC  
 L61 0 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L58 AND ALICYCLIC?  
 L62 17 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L55 OR L59 OR L60 OR  
 L61  
 L63 13 SEA FILE=WPIX SPE=ON ABB=ON PLU=ON L62 AND (PRY<=2006  
 OR PY<=2006 OR AY<=2006)

=> fil japio

FILE 'JAPIO' ENTERED AT 16:14:59 ON 12 JUL 2011

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FILE LAST UPDATED: 11 JUL 2011 <20110711/UP>

MOST RECENT PUBLICATION DATE: 31 MAR 2011 <20110331/PD>

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=> d que 171

L11 QUE SPE=ON ABB=ON PLU=ON SELF ASSEMBLED MONOLAYER? OR  
 SAM  
 L13 QUE SPE=ON ABB=ON PLU=ON (THERMAL? OR TEMP? OR HEAT?)  
 (3A)TREAT?  
 L17 QUE SPE=ON ABB=ON PLU=ON POLYMER? OR MONOMER? OR RESI  
 N? OR POLYMORPHIC? OR PLASTIC? OR THERMOPLAST? OR RUBBER?  
 L22 QUE SPE=ON ABB=ON PLU=ON PATTERN? OR DESIGN?  
 L23 QUE SPE=ON ABB=ON PLU=ON SUBSTRAT? OR SURFACE? OR BAS  
 E# OR SUBSTRUCT? OR UNDERSTRUCT? OR UNDERLAY? OR FOUNDATI  
 ON? OR PANE? OR DISK? OR DISC# OR WAFER?  
 L36 QUE SPE=ON ABB=ON PLU=ON (FIRST OR 1ST OR 1 ST OR PRI  
 MARY? OR ONE)(3A)STRUCTUR?  
 L37 QUE SPE=ON ABB=ON PLU=ON (SECOND? OR 2ND OR 2 ND OR D  
 OUBLE? OR TWO OR NEXT)(3A)STRUCTUR?  
 L64 53 SEA FILE=JAPIO SPE=ON ABB=ON PLU=ON L11(5A)L23  
 L65 9 SEA FILE=JAPIO SPE=ON ABB=ON PLU=ON L64 AND L17  
 L66 0 SEA FILE=JAPIO SPE=ON ABB=ON PLU=ON L64 AND (L36 OR  
 L37)  
 L67 0 SEA FILE=JAPIO SPE=ON ABB=ON PLU=ON L64 AND ANCHOR?(5A)S  
 URFACE?  
 L68 11 SEA FILE=JAPIO SPE=ON ABB=ON PLU=ON L64 AND L22  
 L69 0 SEA FILE=JAPIO SPE=ON ABB=ON PLU=ON L64 AND L13  
 L70 17 SEA FILE=JAPIO SPE=ON ABB=ON PLU=ON (L65 OR L66 OR L67  
 OR L68 OR L69)  
 L71 12 SEA FILE=JAPIO SPE=ON ABB=ON PLU=ON L70 AND (PRY<=2006  
 OR PY<=2006 OR AY<=2006)

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=> d que 180
L11      QUE SPE=ON  ABB=ON  PLU=ON  SELF ASSEMBLED MONOLAYER? OR
        SAM
L13      QUE SPE=ON  ABB=ON  PLU=ON  (THERMAL? OR TEMP? OR HEAT?)
        (3A)TREAT?
L17      QUE SPE=ON  ABB=ON  PLU=ON  POLYMER? OR MONOMER? OR RESI
        N? OR POLYMORPHIC? OR PLASTIC? OR THERMOPLAST? OR RUBBER?
L22      QUE SPE=ON  ABB=ON  PLU=ON  PATTERN? OR DESIGN?
L23      QUE SPE=ON  ABB=ON  PLU=ON  SUBSTRAT? OR SURFACE? OR BAS
        E# OR SUBSTRUCT? OR UNDERSTRUCT? OR UNDERLAY? OR FOUNDATI
        ON? OR PANE? OR DISK? OR DISC# OR WAFER?
L36      QUE SPE=ON  ABB=ON  PLU=ON  (FIRST OR 1ST OR 1 ST OR PRI
        MARY? OR ONE)(3A)STRUCTUR?
L37      QUE SPE=ON  ABB=ON  PLU=ON  (SECOND? OR 2ND OR 2 ND OR D
        OUBLE? OR TWO OR NEXT)(3A)STRUCTUR?
L64      53 SEA FILE=JAPIO SPE=ON  ABB=ON  PLU=ON  L11(5A)L23
L65      9 SEA FILE=JAPIO SPE=ON  ABB=ON  PLU=ON  L64 AND L17
L66      0 SEA FILE=JAPIO SPE=ON  ABB=ON  PLU=ON  L64 AND (L36 OR
        L37)
L67      0 SEA FILE=JAPIO SPE=ON  ABB=ON  PLU=ON  L64 AND ANCHOR?(5A)S
        URFACE?
L68      11 SEA FILE=JAPIO SPE=ON  ABB=ON  PLU=ON  L64 AND L22
L69      0 SEA FILE=JAPIO SPE=ON  ABB=ON  PLU=ON  L64 AND L13
L72      966 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  (L65 OR L66 OR L67
        OR L68 OR L69)
L73      25 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L72 AND L13
L74      0 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L73 AND (L36 OR
        L37)
L75      2 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L73 AND SURFAC?(3A)
        MODIF?
L76      7 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L73 AND L22
L77      9 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L73 AND L17
L78      0 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L73 AND ALICYCLIC?
L79      15 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  (L74 OR L75 OR L76
        OR L77 OR L78)
L80      10 SEA FILE=PASCAL SPE=ON  ABB=ON  PLU=ON  L79 AND PY<=2006
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=> fil compendex  
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=> d que 185

L11		QUE	SPE=ON	ABB=ON	PLU=ON	SELF ASSEMBLED MONOLAYER? OR SAM
L13		QUE	SPE=ON	ABB=ON	PLU=ON	(THERMAL? OR TEMP? OR HEAT?) (3A)TREAT?
L17		QUE	SPE=ON	ABB=ON	PLU=ON	POLYMER? OR MONOMER? OR RESIN? OR POLYMORPHIC? OR PLASTIC? OR THERMOPLAST? OR RUBBER?
L22		QUE	SPE=ON	ABB=ON	PLU=ON	PATTERN? OR DESIGN?
L23		QUE	SPE=ON	ABB=ON	PLU=ON	SUBSTRAT? OR SURFACE? OR BASE# OR SUBSTRUCT? OR UNDERSTRUCT? OR UNDERLAY? OR FOUNDATION? OR PANE? OR DISK? OR DISC# OR WAFER?
L36		QUE	SPE=ON	ABB=ON	PLU=ON	(FIRST OR 1ST OR 1 ST OR PRIMARY? OR ONE) (3A)STRUCTUR?
L37		QUE	SPE=ON	ABB=ON	PLU=ON	(SECOND? OR 2ND OR 2 ND OR DOUBLE? OR TWO OR NEXT) (3A)STRUCTUR?
L64	53	SEA FILE=JAPIO	SPE=ON	ABB=ON	PLU=ON	L11(5A)L23
L65	9	SEA FILE=JAPIO	SPE=ON	ABB=ON	PLU=ON	L64 AND L17
L66	0	SEA FILE=JAPIO	SPE=ON	ABB=ON	PLU=ON	L64 AND (L36 OR L37)
L67	0	SEA FILE=JAPIO	SPE=ON	ABB=ON	PLU=ON	L64 AND ANCHOR?(5A)SURFACE?
L68	11	SEA FILE=JAPIO	SPE=ON	ABB=ON	PLU=ON	L64 AND L22
L69	0	SEA FILE=JAPIO	SPE=ON	ABB=ON	PLU=ON	L64 AND L13
L72	966	SEA FILE=PASCAL	SPE=ON	ABB=ON	PLU=ON	(L65 OR L66 OR L67 OR L68 OR L69)
L73	25	SEA FILE=PASCAL	SPE=ON	ABB=ON	PLU=ON	L72 AND L13
L74	0	SEA FILE=PASCAL	SPE=ON	ABB=ON	PLU=ON	L73 AND (L36 OR L37)
L75	2	SEA FILE=PASCAL	SPE=ON	ABB=ON	PLU=ON	L73 AND SURFAC?(3A)MODIF?
L76	7	SEA FILE=PASCAL	SPE=ON	ABB=ON	PLU=ON	L73 AND L22
L77	9	SEA FILE=PASCAL	SPE=ON	ABB=ON	PLU=ON	L73 AND L17
L78	0	SEA FILE=PASCAL	SPE=ON	ABB=ON	PLU=ON	L73 AND ALICYCLIC?
L79	15	SEA FILE=PASCAL	SPE=ON	ABB=ON	PLU=ON	(L74 OR L75 OR L76 OR L77 OR L78)
L81	31	SEA FILE=COMPENDEX	SPE=ON	ABB=ON	PLU=ON	L79 AND PY<=2006
L82	2	SEA FILE=COMPENDEX	SPE=ON	ABB=ON	PLU=ON	L81 AND SURFAC?(3A) (MODIF? OR ANCHOR?)
L83	16	SEA FILE=COMPENDEX	SPE=ON	ABB=ON	PLU=ON	L81 AND L17
L84	1	SEA FILE=COMPENDEX	SPE=ON	ABB=ON	PLU=ON	L83 AND (LITHOG? OR PRING? OR PHOTOG?)
L85	3	SEA FILE=COMPENDEX	SPE=ON	ABB=ON	PLU=ON	L82 OR L84

=> dup rem 142 163 171 180 185

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PROCESSING COMPLETED FOR L42

PROCESSING COMPLETED FOR L63

PROCESSING COMPLETED FOR L71

PROCESSING COMPLETED FOR L80

PROCESSING COMPLETED FOR L85

L86 66 DUP REM L42 L63 L71 L80 L85 (3 DUPLICATES REMOVED)

ANSWERS '1-31' FROM FILE HCAPLUS

ANSWERS '32-42' FROM FILE WPIX

ANSWERS '43-54' FROM FILE JAPIO

ANSWERS '55-64' FROM FILE PASCAL

ANSWERS '65-66' FROM FILE COMPENDEX

=&gt; d l-31 ibib ed abs hitstr hitind

L86 ANSWER 1 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2005:1075706 HCAPLUS Full-text

DOCUMENT NUMBER: 143:374060

TITLE: Patterning by thermal  
treatment of self-  
assembled monolayer  
anchored on substrate  
surface

INVENTOR(S): Buck, Manfred; Cyganik, Piotr

PATENT ASSIGNEE(S): The University Court of the University of St.  
Andrews, UK

SOURCE: PCT Int. Appl., 24 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2005092516	A1	20051006	WO 2005-GB1159	20050324
			<--	

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US,  
UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
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 GN, GQ, GW, ML, MR, NE, SN, TD, TG

GB 2426724 A 20061206 GB 2006-18673 20050324  
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GB 2426724 B 20080903  
 US 20070140901 A1 20070621 US 2006-594654 20060926  
 <--

PRIORITY APPLN. INFO.: GB 2004-6841 A 20040326  
 <--

WO 2005-GB1159 W 20050324  
 <--

# ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 07 Oct 2005

AB The present invention provides a process for producing a surface-modified layer system comprising a substrate and a self-assembled monolayer (SAM) anchored to its surface. The SAM is comprised by aryl or rigid alicyclic moiety species. The process comprises providing a polymorphic SAM anchored to the substrate, e.g., a conductor or semiconductor metal or compound, and thermally treating the SAM to change from a first to a second structural form thereof. The invention also provides a thermolithog. process in which the thermal treatment is used to transfer a pattern to the SAM, which is then developed.

IT 1303-00-0, Gallium arsenide, uses 7429-90-5,  
 Aluminum, uses 7439-89-6, Iron, uses 7439-96-5  
 , Manganese, uses 7439-98-7, Molybdenum, uses  
 7440-06-4, Platinum, uses 7440-22-4, Silver, uses  
 7440-32-6, Titanium, uses 7440-33-7, Tungsten,  
 uses 7440-47-3, Chromium, uses 7440-57-5,  
 Gold, uses 7440-62-2, Vanadium, uses 7440-67-7  
 , Zirconium, uses 22398-80-7, Indium phosphide, uses  
 (substrate; patterning by thermal  
 treatment of self-assembled  
 monolayer anchored on substrate  
 surface)

RN 1303-00-0 HCAPLUS

CN Gallium arsenide (GaAs) (CA INDEX NAME)



RN 7429-90-5 HCAPLUS

CN Aluminum (CA INDEX NAME)

Al

RN 7439-89-6 HCAPLUS

CN Iron (CA INDEX NAME)



Fe

RN 7439-96-5 HCAPLUS  
CN Manganese (CA INDEX NAME)

Mn

RN 7439-98-7 HCAPLUS  
CN Molybdenum (CA INDEX NAME)

Mo

RN 7440-06-4 HCAPLUS  
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS  
CN Silver (CA INDEX NAME)

Ag

RN 7440-32-6 HCAPLUS  
CN Titanium (CA INDEX NAME)

Ti

RN 7440-33-7 HCAPLUS  
CN Tungsten (CA INDEX NAME)

W

RN 7440-47-3 HCAPLUS  
CN Chromium (CA INDEX NAME)

Cr

RN 7440-57-5 HCAPLUS  
CN Gold (CA INDEX NAME)

Au

RN 7440-62-2 HCAPLUS  
CN Vanadium (CA INDEX NAME)

V

RN 7440-67-7 HCAPLUS  
CN Zirconium (CA INDEX NAME)

Zr

RN 22398-80-7 HCAPLUS  
CN Indium phosphide (InP) (CA INDEX NAME)

In  
P

IPCI B05D0001-18 [ICM,7]; B05D0003-02 [ICS,7]  
IPCR B05D0001-18 [I,C\*]; B05D0001-18 [I,A]; B05D0003-02 [I,C\*]; B05D0003-02 [I,A]; B05D0005-00 [N,C\*]; B05D0005-00 [N,A]  
CC 66-3 (Surface Chemistry and Colloids)  
ST Section cross-reference(s): 74, 76  
self assembled monolayer  
substrate surface thermal  
treatment patterning  
IT Self-assembled monolayers  
Surface phase transition  
Surface structure  
(patterning by thermal treatment of  
self-assembled monolayer

anchored on substrate surface)

IT Lithography  
(thermo-; patterning by thermal  
treatment of self-assembled  
monolayer anchored on substrate  
surface)

IT 298704-23-1  
(SAM, gold bound; patterning by thermal  
treatment of self-assembled  
monolayer anchored on substrate  
surface)

IT 1303-00-0, Gallium arsenide, uses 7429-90-5,  
Aluminum, uses 7439-89-6, Iron, uses 7439-96-5  
, Manganese, uses 7439-98-7, Molybdenum, uses  
7440-06-4, Platinum, uses 7440-22-4, Silver, uses  
7440-32-6, Titanium, uses 7440-33-7, Tungsten,  
uses 7440-47-3, Chromium, uses 7440-57-5,  
Gold, uses 7440-62-2, Vanadium, uses 7440-67-7  
, Zirconium, uses 12597-69-2, Steel, uses 22398-80-7,  
Indium phosphide, uses  
(substrate; patterning by thermal  
treatment of self-assembled  
monolayer anchored on substrate  
surface)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L86 ANSWER 2 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN DUPLICATE 3

ACCESSION NUMBER: 2004:41702 HCAPLUS Full-text

DOCUMENT NUMBER: 140:117951

TITLE: A method for producing, and a product having, a  
surface nanopattern

INVENTOR(S): Monbouquette, Harold G.; Garcia-Garibay, Miguel

PATENT ASSIGNEE(S): The Regents of the University of California, USA

SOURCE: PCT Int. Appl., 67 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004005587	A2	20040115	WO 2003-US21496	20030708
WO 2004005587	A3	20040401	<--	
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003247950	A1	20040123	AU 2003-247950	20030708

US 20060068090	A1	20060330	US 2005-29303	20050105
			<--	
US 7524408	B2	20090428	<--	
US 20090269555	A1	20091029	US 2009-409079	20090323
			<--	
PRIORITY APPLN. INFO.:			US 2002-394701P	P 20020708
			<--	
			WO 2003-US21496	W 20030708
			<--	
			US 2005-29303	A3 20050105
			<--	

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 18 Jan 2004

AB The title method comprises the steps of: obtaining a substrate with a smooth surface; acquiring a self-assembling monolayer precursor, wherein the precursor includes an inducible, usually photocatalytically, active region and a substrate attachment region; mixing a plurality of the self-assembling monolayer precursors with the substrate to produce a self-assembled monolayer having an exposed surface comprising the inducible active regions and anchored to the substrate smooth surface by the substrate attachment regions; obtaining a path-directable nanoparticle; contacting the path-directable nanoparticle with the exposed surface at an interface area; exposing the exposed surface contacted with the path-directable nanoparticle to an inducing event, usually exposure to light, thereby chemical altering the inducible active regions and producing a detectable state in the interface area on the exposed surface; and applying a force of variable magnitude and direction in the plane of the surface to the contacted path-directable nanoparticle to produce movement of the contacted nanoparticle over the exposed surface thereby extending the detectable state interface area into a detectable trace over the exposed surface to produce the nanopatterned surface.

IT 7440-57-5, Gold, processes  
 (surface; surface nanopatterning by photochem.  
 reaction of photocatalytically active surface of  
 functionalized SAMs anchored to atomically  
 smooth surfaces)

RN 7440-57-5 HCAPLUS

CN Gold (CA INDEX NAME)

AU

IPCI C25D [ICH, 7]

IPCR C25D0013-00 [I,A]

CC 66-3 (Surface Chemistry and Colloids)

Section cross-reference(s): 74

ST surface nanopatterning self assembled  
 monolayer photocatalysis; quantum dot catalyst self  
 assembled monolayer photoredox surface  
 nanopatterning

IT Catalysis

Decarboxylation

Wolff rearrangement

(photochem.; surface nanopatterning by photochem.  
 reaction of photocatalytically active surface of  
 functionalized SAMs anchored to atomically  
 smooth surfaces)

IT Nanoparticles  
 (surface nanopatterning by photocatalytic reduction of aromatic azide SAMs anchored to atomically smooth surfaces using photocatalytic quantum dots)

IT Reduction, photochemical  
 Self-assembled monolayers  
 (surface nanopatterning by photochem. reaction of photocatalytically active surface of functionalized SAMs anchored to atomically smooth surfaces)

IT 1306-23-6, Cadmium sulfide (CdS), uses 1306-24-7, Cadmium selenide (CdSe), uses  
 (quantum dots; surface nanopatterning by photochem. reduction of azide functionalized SAMs anchored to atomically smooth surfaces using photocatalytic quantum dots)

IT 646450-16-0  
 (surface nanopatterning by photochem. reduction of azide functionalized SAMs anchored to atomically smooth surfaces using photocatalytic quantum dots)

IT 646450-14-8P  
 (surface nanopatterning by photochem. reduction of azide functionalized SAMs anchored to atomically smooth surfaces using photocatalytic quantum dots)

IT 18654-84-7 29972-79-0 41240-59-9 54716-25-5  
 (surface nanopatterning by photodecarboxylation of carboxylic acid SAMs anchored to atomically smooth surfaces)

IT 646450-17-1 646450-18-2 646450-19-3 646450-20-6  
 (surface nanopatterning by photodecarboxylation of ester SAMs anchored to atomically smooth surfaces)

IT 646450-15-9 646450-21-7 646450-22-8  
 (surface nanopatterning by photodenitrogenation and Wolff rearrangement of diazoketone SAMs anchored to atomically smooth surfaces)

IT 7440-57-5, Gold, processes 7631-86-9, Silica, processes  
 (surface; surface nanopatterning by photochem. reaction of photocatalytically active surface of functionalized SAMs anchored to atomically smooth surfaces)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 3 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2011:22589 HCAPLUS Full-text

DOCUMENT NUMBER: 154:221129

TITLE: Ultrasmall Structure Fabrication via a Facile Size Modification of Nanoimprinted Functional Silsesquioxane Features

AUTHOR(S): Pina-Hernandez, Carlos; Fu, Peng-Fei; Guo, L. Jay

CORPORATE SOURCE: The University of Michigan, Ann Arbor, MI, 48109, USA

SOURCE: ACS Nano (2011), 5(2), 923-931  
 CODEN: ANCAC3; ISSN: 1936-0851

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal; (online computer file)

LANGUAGE: English

ED Entered STN: 07 Jan 2011

AB The authors propose a simple and robust scheme for a precise and controlled fabrication of ultrasmall structures through the direct size modification (either reduction or increment) of functional nanoimprinted silsesquioxane (SSQ) patterns. The size modification of nanopatterned SSQ polymer features was achieved according to two different independent approaches. In the first approach, feature size was reduced by a simple heat-induced mass loss mechanism; in the second approach structure size increment was achieved by building multiple polymeric layers on top of imprinted patterns. The fabricated arrays follow the shape contour of the patterned structures so the original imprinted profile is preserved. The engineered capabilities were applied to produce high resolution stamps for nanoimprinting. These approaches free the need for sophisticated nanofabrication techniques and expensive facilities required for nanopatterning.

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST modification nanoimprinted silsesquioxane structure thermal treatment polymer layer growth

IT Heat treatment

Thermal decomposition

(direct reduction of nanoimprinted silsesquioxane structures by thermal treatment)

IT Silsesquioxanes

(epoxy-; direct reduction of nanoimprinted silsesquioxane structures by thermal treatment)

IT Acrylic polymers

(silsesquioxane-; direct modification of nanoimprinted silsesquioxane structures by polymeric layers growth)

IT Epoxy resins

(silsesquioxane-; direct reduction of nanoimprinted silsesquioxane structures by thermal treatment)

IT 13598-78-2, Silylamine

(direct modification of nanoimprinted silsesquioxane structures by polymeric layers growth)

IT 13598-78-2D, Silylamine, reaction product with surface-bound

silsesquioxane pattern and with epoxy-terminated polydimethylsiloxane (direct modification of nanoimprinted silsesquioxane structures by polymeric layers growth)

IT 9016-00-6D, Poly[oxy(dimethylsilylene)], reaction product with silylamine compound with surface-bound silsesquioxane

31900-57-9D, Polydimethylsiloxane, reaction product with silylamine compound with surface-bound silsesquioxane

(epoxy-terminated; direct modification of nanoimprinted silsesquioxane structures by polymeric layers growth)

IT 155303-07-4, Perfluorodecyltrichlorosilane

(mold release layer; direct reduction of nanoimprinted silsesquioxane structures by thermal treatment)

IT 2530-85-0, 3-(Trimethoxysilyl)propyl methacrylate

(self assembled monolayer; direct modification of nanoimprinted silsesquioxane structures by chemical and phys. processes)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 4 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2006:502310 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 145:174943

TITLE: Bond Fluctuation of S/Se Anchoring Observed in

Single-Molecule Conductance Measurements using the  
Point Contact Method with Scanning Tunneling  
Microscopy

AUTHOR(S): Yasuda, Satoshi; Yoshida, Shoji; Sasaki, Jiro;  
Okutsu, Yoshitaka; Nakamura, Tohru; Taninaka,  
Atsushi; Takeuchi, Osamu; Shigekawa, Hidemi  
CORPORATE SOURCE: Institute of Applied Physics, CREST-JST,  
University of Tsukuba, Tsukuba, 305-8573, Japan  
SOURCE: Journal of the American Chemical Society (   
2006), 128(24), 7746-7747  
CODEN: JACSAT; ISSN: 0002-7863  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
ED Entered STN: 30 May 2006  
AB Conductance was measured for the single mols. with S/Se anchoring on a Au  
surface using the point contact method with scanning tunneling microscopy that  
enables us to selectively perform a repeated anal. of a chosen target mol.  
Apparent conductance changes observed in sequential measurements suggest the  
existence of bond fluctuation among the adsorption sites.  
IT 7440-57-5D, Gold, modified with thiol or thiophene  
(bond fluctuation of S/Se anchoring observed in single-mol.  
conductance measurement)  
RN 7440-57-5 HCAPLUS  
CN Gold (CA INDEX NAME)

Au

CC 66-3 (Surface Chemistry and Colloids)  
ST bond fluctuation SAM single mol conductance measurement STM  
IT Electric conductivity  
Scanning tunneling microscopy  
Self-assembled monolayers  
(bond fluctuation of S/Se anchoring observed in single-mol.  
conductance measurement)  
IT 7440-57-5D, Gold, modified with thiol or thiophene  
(bond fluctuation of S/Se anchoring observed in single-mol.  
conductance measurement)  
OS.CITING REF COUNT: 35 THERE ARE 35 CAPLUS RECORDS THAT CITE THIS  
RECORD (35 CITINGS)  
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L86 ANSWER 5 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
ACCESSION NUMBER: 2006:351476 HCAPLUS Full-text  
DOCUMENT NUMBER: 145:51485  
TITLE: Measurement of the Azimuthal Anchoring Energy of  
Liquid Crystals in Contact with Oligo(ethylene  
glycol)-Terminated Self-  
Assembled Monolayers Supported  
on Obliquely Deposited Gold Films  
AUTHOR(S): Clare, Brian H.; Guzman, Orlando; De Pablo, Juan  
J.; Abbott, Nicholas L.  
CORPORATE SOURCE: Department of Chemical and Biological Engineering,  
University of Wisconsin-Madison, Madison, WI,

SOURCE: 53706, USA  
 Langmuir (2006), 22(10), 4654-4659  
 CODEN: LANGD5; ISSN: 0743-7463  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 19 Apr 2006

AB We report measurements of the orientations and azimuthal anchoring energies of the nematic liquid crystal 4-cyano-4'-pentylbiphenyl (5CB) on polycryst. gold films that are deposited from a vapor at an oblique angle of incidence and subsequently decorated with organized monolayers of oligomers of ethylene glycol. Whereas the gold films covered with monolayers presenting tetra(ethylene glycol) (EG4) lead to orientations of 5CB that are perpendicular to the plane of incidence of the gold, monolayers presenting tri(ethylene glycol) (EG3) direct 5CB to orient parallel to the plane of incidence of the gold during deposition of the gold film. We also measure the azimuthal anchoring energy of the 5CB to be smaller on the surfaces presenting EG3 ( $3.2 \pm 0.8 \mu\text{J}/\text{m}^2$ ) as compared to EG4 ( $5.5 \pm 0.9 \mu\text{J}/\text{m}^2$ ). These measurements, when combined with other results presented in this paper, are consistent with a phys. model in which the orientation and anchoring energies of LCs on these surfaces are influenced by both (i) short-range interactions of 5CB with organized oligomers of ethylene glycol at these surfaces and (ii) long-range interactions of 5CB with the nanometer-scale topog. of the obliquely deposited films. For surfaces presenting EG3, these short- and long-range interactions oppose each other, leading to small net values of anchoring energies that we predict are dependent on the level of order in the EG3 SAM. These measurements provide insights into the balance of interactions that control the orientational response of LCs to biol. species (proteins, viruses, cells) on these surfaces.

IT 7440-57-5D, Gold, thiolated  
 (azimuthal anchoring energy of liquid crystal on SAM of  
 oligoethylene glycol)  
 RN 7440-57-5 HCAPLUS  
 CN Gold (CA INDEX NAME)

Au

CC 66-4 (Surface Chemistry and Colloids)  
 Section cross-reference(s): 75  
 ST azimuthal anchoring energy liq crystal SAM oligoethylene  
 glycol gold  
 IT Adsorption energy  
 Liquid crystals  
 Molecular orientation  
 Self-assembled monolayers  
 (azimuthal anchoring energy of liquid crystal on SAM of  
 oligoethylene glycol)  
 IT 7440-57-5D, Gold, thiolated  
 (azimuthal anchoring energy of liquid crystal on SAM of  
 oligoethylene glycol)  
 IT 130727-41-2D, gold bound 130727-42-3D, gold bound  
 (azimuthal anchoring energy of liquid crystal on SAM of  
 oligoethylene glycol)  
 IT 40817-08-1, 5Cb  
 (azimuthal anchoring energy of liquid crystal on SAM of  
 oligoethylene glycol)



OS.CITING REF COUNT: 13 THERE ARE 13 CAPLUS RECORDS THAT CITE THIS RECORD (16 CITINGS)

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 6 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2006:842378 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:444494  
 TITLE: Assembled monolayers of Mo3S44+ clusters on well-defined surfaces  
 AUTHOR(S): Kristensen, Jytte; Zhang, Jingdong; Chorkendorff, Ib; Ulstrup, Jens; Ooi, Bee Lean  
 CORPORATE SOURCE: Department of Chemistry, NanoDTU, Building 207, Technical University of Denmark, Lyngby, Kemitorvet, 2800, Den.  
 SOURCE: Dalton Transactions (2006), (33), 3985-3990  
 CODEN: DTARAF; ISSN: 1477-9226  
 PUBLISHER: Royal Society of Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 24 Aug 2006

AB A class of inorg. monolayers formed by assembling the molybdenum-sulfur cluster, Mo3S44+, onto a well-defined Au(111) surface is presented. The monolayers have been comprehensively characterized by electrochem., XPS, and in situ scanning tunneling microscopy (in situ STM). The voltammetric data show strong reductive and oxidative desorption signals from Au-S interactions, supported by the presence of both S and Mo signals in XPS. In situ STM shows many small pits in the dense adlayers uniformly spread over the surface, which is a typical feature of self-assembled monolayers (SAMs) of alkanethiols. The d. of the pits is ca. 23 (±5)% and is significantly higher than for straight-chain alkanethiol SAMs with a single -SH group. The pit shapes are irregular, suggesting multiple Au-S interactions from Mo3S44+. High resolution images disclose bright round spots of ca. 8 Å diameter representing individual mols. in the SAM. This is the first example of in situ monolayer formation by a metal-chalcogenide cluster directly anchored onto the gold surface through core ligands and offers a simple way to prepare a new class of functionalized inorg. monolayers.

CC 66-4 (Surface Chemistry and Colloids)

Section cross-reference(s): 72

ST monolayer molybdenum sulfide cluster gold electrode surface

IT Clusters

Monolayers

(preparation of monolayer of molybdenum sulfide cluster on gold electrode surface)

IT 7440-57-5, Gold, processes

(preparation of monolayer of molybdenum sulfide cluster on gold electrode surface)

IT 125922-40-9

(preparation of monolayer of molybdenum sulfide cluster on gold electrode surface)

OS.CITING REF COUNT: 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)

REFERENCE COUNT: 63 THERE ARE 63 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 7 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2006:522469 HCAPLUS Full-text

DOCUMENT NUMBER: 145:223827  
 TITLE: Supramolecular 'flat' Mn9 grid complexes-towards functional molecular platforms  
 AUTHOR(S): Milway, Victoria A.; Abedin, S. M. Tareque; Niel, Virginie; Kelly, Timothy L.; Dawe, Louise N.; Dey, Subrata K.; Thompson, David W.; Miller, David O.; Alam, Mohammad Sahabul; Mueller, Paul; Thompson, Laurence K.  
 CORPORATE SOURCE: Department of Chemistry, Memorial University, St. John's, NL, A1B 3X7, Can.  
 SOURCE: Dalton Transactions (2006), (23), 2835-2851  
 CODEN: DTARAF; ISSN: 1477-9226  
 PUBLISHER: Royal Society of Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 145:223827  
 ED Entered STN: 05 Jun 2006  
 AB Flat, quantum dot like arrays of closely spaced, electron rich metal centers are seen as attractive subunits for device capability at the mol. level. Mn(II)9 grids, formed by self-assembly processes using 'triotopic' pyridine-2,6-dihydrazone ligands, provide easy and pre-programmable routes to such systems, and exhibit a number of potentially useful phys. properties, which could be used to generate bi-stable mol. based states. Their ability to form surface monolayers, which can be mapped by STM techniques, bodes well for their possible integration into nanometer scale electronic components of the future. This report highlights some new Mn(II)9 grids, with functionalized ligand sites, that may provide suitable anchor points to surfaces and also be potential donor sites capable of further grid elaboration. Structures, magnetic properties, electrochem. properties, surface studies on HOPG (highly ordered pyrolytic graphite), including the imaging of individual metal ion sites in the grid using CITS (current imaging tunneling spectroscopy) are discussed, in addition to an anal. of the photophysics of a stable mixed oxidation state [Mn(III)4Mn(II)5] grid. The grid phys. properties as a whole are assessed in the light of reasonable approaches to the use of such mols. as nanometer scale devices.  
 CC 78-7 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 66, 72, 73, 75, 77  
 IT Self-assembled monolayers  
 (of manganese pyridinedihydrazone nonanuclear grid complexes on HOPG)  
 OS.CITING REF COUNT: 31 THERE ARE 31 CAPLUS RECORDS THAT CITE THIS RECORD (31 CITINGS)  
 REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT  
 L86 ANSWER 8 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2006:522465 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:218722  
 TITLE: Novel tripod ligands for prickly self-assembled monolayers  
 AUTHOR(S): Weidner, Tobias; Kraemer, Andreas; Bruhn, Clemens; Zharnikov, Michael; Shaporenko, Andrey; Siemeling, Ulrich; Traeger, Frank  
 CORPORATE SOURCE: Institute of Physics, University of Kassel, Kassel, D-34132, Germany  
 SOURCE: Dalton Transactions (2006), (23), 2767-2777  
 CODEN: DTARAF; ISSN: 1477-9226

PUBLISHER: Royal Society of Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 05 Jun 2006

AB The new tridentate thioether ligands PhSi(CH<sub>2</sub>SM<sub>e</sub>)<sub>3</sub> (1) and Ph-p-C<sub>6</sub>H<sub>4</sub>Si(CH<sub>2</sub>SM<sub>e</sub>)<sub>3</sub> (2) have been synthesized and used for the preparation of the chelates fac-[W(κ<sup>3</sup>-1)(CO)<sub>3</sub>] and fac-[W(κ<sup>3</sup>-2)(CO)<sub>3</sub>], which were characterized by single-crystal X-ray diffraction. 1 And 2 were used as tripodal adsorbate mols. for the fabrication of self-assembled monolayers (SAMs) on gold. Film formation from solution was investigated in situ by second harmonic generation (SHG) and ellipsometry, which revealed a two-stepped process (fast adsorption, followed by slow film ordering). SAMs of 2 on gold were further investigated by ex situ methods, viz. high-resolution XPS (HRXPS), Fourier transform IR reflection absorption spectroscopy (FTIRRAS), and scanning tunneling microscopy (STM). The latter two methods indicated dense packing of the tripodal anchor groups on the surface, with a substantially lower d. of the biphenyl pricks. HRXPS showed three different binding states of sulfur, including a standard thiolate-type and a coordination-type state. Crystal structures of the chelates have been described.

IT 7440-57-5D, Gold, thiolated  
 (synthesis of tridentate thioether ligand and its use for preparation of prickly self-assembled monolayer on gold)

RN 7440-57-5 HCAPLUS  
 CN Gold (CA INDEX NAME)

AU

CC 66-4 (Surface Chemistry and Colloids)  
 Section cross-reference(s): 75, 78

ST tripod tridentate thioether ligand prickly self  
 assembled monolayer gold

IT Self-assembled monolayers  
 Surface structure  
 (synthesis of tridentate thioether ligand and its use for preparation of prickly self-assembled monolayer on gold)

IT 7440-57-5D, Gold, thiolated  
 (synthesis of tridentate thioether ligand and its use for preparation of prickly self-assembled monolayer on gold)

IT 18030-61-0P, 4-Trichlorosilyl biphenyl 904293-93-2P 904293-94-3P  
 904293-95-4P 904293-97-6P  
 (synthesis of tridentate thioether ligand and its use for preparation of prickly self-assembled monolayer on gold)

OS.CITING REF COUNT: 27 THERE ARE 27 CAPLUS RECORDS THAT CITE THIS RECORD (27 CITINGS)

REFERENCE COUNT: 84 THERE ARE 84 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 9 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2006:291576 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 145:15496

TITLE: Orientations of Liquid Crystals in Contact with

SURFACES THAT PRESENT CONTINUOUS GRADIENTS  
OF CHEMICAL FUNCTIONALITY  
AUTHOR(S): Clare, Brian H.; Efimenko, Kirill; Fischer, Daniel  
A.; Genzer, Jan; Abbott, Nicholas L.  
CORPORATE SOURCE: Department of Chemical & Biological Engineering,  
University of Wisconsin-Madison, Madison, WI,  
53706, USA  
SOURCE: Chemistry of Materials (2006), 18(9),  
2357-2363  
CODEN: CMATEX; ISSN: 0897-4756  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

ED Entered STN: 30 Mar 2006

AB We report the formation of continuous spatial gradients in the d. of grafted semifluorinated chains on silicon oxide surfaces by vapor-phase diffusion of semifluorinated silanes. We quantify the orientations of the nematic liquid crystal (LC) 4-cyano-4'-pentylbiphenyl on these surfaces as a function of local surface composition obtained by using NEXAFS. These measurements demonstrate that it is possible to obtain the full range of tilt angles of a LC on these surfaces. We also use the data provided by these gradient surfaces to test hypotheses regarding the nature of the interaction between the LC and surfaces that give rise to the range of tilted orientations of the LC. We conclude that the orientations of the LC are not determined solely by the d. of grafted semifluorinated chains or by the d. of residual hydroxyl groups presented at these surfaces following reactions with the silanes. Instead, our results raise the possibility that the tilt angles of the semifluorinated chains on these surfaces (which are a function of the d. of the grafted chains) may influence the orientation of the LC. These results, when combined, demonstrate the potential utility of gradient surfaces for screening surface chemistries that achieve desired orientations of LCs as well as for rapidly assembling exptl. data sets that can be used to test propositions regarding mechanisms of anchoring LCs at surfaces.

CC 66-4 (Surface Chemistry and Colloids)

ST orientation liq crystal surface continuous gradient chem  
functionality

IT Liquid crystals

(nematic; orientation of liquid crystal on surface with  
continuous gradient of chemical functionality)

IT Molecular orientation

Self-assembled monolayers

(orientation of liquid crystal on surface with continuous  
gradient of chemical functionality)

IT 7631-86-9D, Silicon oxide, silylated

(orientation of liquid crystal on surface with continuous  
gradient of chemical functionality)

IT 887780-36-1D, silica bound 887780-37-2D, silica bound

(orientation of liquid crystal on surface with continuous  
gradient of chemical functionality)

IT 40817-08-1, 4-Cyano-4'-pentylbiphenyl

(orientation of liquid crystal on surface with continuous  
gradient of chemical functionality)

OS.CITING REF COUNT: 14 THERE ARE 14 CAPLUS RECORDS THAT CITE THIS  
RECORD (14 CITINGS)

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L86 ANSWER 10 OF 66 HCAPLUS COPYRIGHT 2011 ACS ON STN

ACCESSION NUMBER: 2006:35572 HCAPLUS Full-text

DOCUMENT NUMBER: 144:300147  
 TITLE: Adsorption kinetics of L-glutathione on gold and structural changes during self-assembly: an in situ ATR-IR and QCM study  
 AUTHOR(S): Bierl, Marco; Buergi, Thomas  
 CORPORATE SOURCE: Institut de Chimie, Universite de Neuchatel, Neuchatel, 2007, Switz.  
 SOURCE: Physical Chemistry Chemical Physics (2006), 8(4), 513-520  
 CODEN: PPCPFQ; ISSN: 1463-9076  
 PUBLISHER: Royal Society of Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 13 Jan 2006

AB The adsorption of L-glutathione ( $\gamma$ -Glu-Cys-Gly) from EtOH on Au surfaces was studied in situ by both attenuated total reflection IR (ATR-IR) spectroscopy and using a quartz crystal microbalance (QCM). The mol. is firmly anchored to the Au surface through the thiol group. Different IR signals of adsorbed L-glutathione, notably the amide I and v(-COOH), show significantly different behavior with time, which reveals that their increase is not related to adsorption (mass uptake) alone. Structural transformations take place during the formation of the self-assembled monolayer (SAM). In particular, the intensity of the acid signal increases quickly only within the 1st couple of minutes. The complexity of the self-assembling process is confirmed by QCM measurements, which show fast mass uptake within approx. 100 s followed by a considerably slower regime. The structural change superimposed on the mass uptake is, based on the in situ time-resolved ATR-IR measurements, assigned to the interaction of the acid group of the Gly moiety with the surface. The latter group is protonated in EtOH but deprotonates upon interaction with the Au surface. The protonation-deprotonation equilibrium is sensitive to external stimuli, such as the presence of dissolved L-glutathione mols. The interaction of the acid group with the surface and concomitant deprotonation proceeds via 2 distinguishable steps, the 1st being a reorientation of the mol., followed by the deprotonation.

CC 66-4 (Surface Chemistry and Colloids)  
 OS.CITING REF COUNT: 12 THERE ARE 12 CAPLUS RECORDS THAT CITE THIS RECORD (12 CITINGS)  
 REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 11 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2005:1026566 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:302050  
 TITLE: Method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM)  
 INVENTOR(S): Takiguchi, Hiroshi; Fukushima, Hitoshi; Masuda, Takashi; Nagamune, Teruyuki; Shinkai, Masashige; Yamawaki, Kengo  
 PATENT ASSIGNEE(S): Seiko Epson Corporation, Japan  
 SOURCE: U.S. Pat. Appl. Publ., 14 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20050208644	A1	20050922	US 2005-85184	20050322
			<--	
JP 2005269902	A	20051006	JP 2004-83281	20040322
			<--	
PRIORITY APPLN. INFO.:			JP 2004-83281	A 20040322
			<--	

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 23 Sep 2005

AB Aspects of the invention can provide a method of immobilizing a chemical compound having the affinity for the cell membrane on the solid-phase surface in a desired pattern. The method of immobilizing a cell in a desired pattern on a solid-phase surface by use of a first chemical compound having an affinity for the cell and can include a step of immobilizing a second chemical compound, which is more easily immobilized on the solid-phase surface than the first chemical compound dose and has a mol. binding site that can bind to the first chemical compound, on the solid-phase surface according to the pattern.

INCL 435281000

IPCI C10G0032-00 [ICM,7]

IPCR C12M0001-40 [I,A]; C10G0032-00 [I,A]; C12M0003-00 [I,A]; C12N0011-00 [I,A]; C12N0011-02 [I,A]

NCL 435/281.000

CC 9-16 (Biochemical Methods)

ST immobilization cell microarray solid phase surface  
biocompatible anchor membrane

IT Biocompatibility

Cell membrane

(biocompatible anchor for membrane, BAM; method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))

IT Adhesion, biological

Cell

Electron beams

Immobilization, molecular or cellular

Ink-jet printing

Ion beams

Microarray technology

Photolithography

Self-assembled monolayers

(method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))

IT Glass, uses

(method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))

IT Carbohydrates, uses

(method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))

IT Polyesters, uses

(method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))

IT Polymers, uses

(method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))

IT Polyoxymethylene, uses

(method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane

(BAM))  
 IT Albumins, uses  
 (serum, bovine; method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))  
 IT 7440-57-5, Gold, uses  
 (method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))  
 IT 919-30-2, Aminopropyl triethoxy silane 25322-68-3, Polyethylene glycol 677352-15-7 852378-78-0 864831-03-8  
 (method of immobilizing cells on solid-phase surface for microarrays using a biocompatible anchor for membrane (BAM))  
 OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L86 ANSWER 12 OF 66 HCAPLUS COPYRIGHT 2011 ACS ON STN  
 ACCESSION NUMBER: 2005:703083 HCAPLUS [Full-text](#)  
 DOCUMENT NUMBER: 143:326687  
 TITLE: Synthesis of gold-poly(methyl methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at elevated temperature  
 AUTHOR(S): Kotal, Atanu; Mandal, Tarun K.; Walt, David R.  
 CORPORATE SOURCE: Polymer Science Unit, Indian Association for the Cultivation of Science, Kolkata, 700 032, India  
 SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (2005), 43(16), 3631-3642  
 CODEN: JPACEC; ISSN: 0887-624X  
 PUBLISHER: John Wiley & Sons, Inc.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 08 Aug 2005

AB Surface-confined atom transfer radical polymerization was used to prepare gold nanoparticle-poly(Me methacrylate) core-shell particles at elevated temperature. First, gold nanoparticles were prepared by one-pot borohydride reduction of tetrachloroaurate in the presence of 11-mercapto-1-undecanol (MUD). MUD-capped gold nanoparticles were then exchanged with 3-mercaptopropyltrimethoxysilane (MPS) to prepare a self-assembled monolayer (SAM) of MPS on the gold nanoparticle surfaces and subsequently hydrolyzed with hydrochloric acid. The extent of exchange of MUD with MPS was determined by NMR. The resulting crosslinked silica-primer layer stabilized the SAM of MPS and was allowed to react with the initiator [(chloromethyl)phenylethyl] trimethoxysilane. Atom transfer radical polymerization was conducted on the Cl-terminated gold nanoparticles with the CuCl<sub>2</sub>/2,2'-bipyridyl catalyst system at elevated temperature. The rate of polymerization with the initiator-modified gold nanoparticles exhibited first-order kinetics with respect to the monomer, and the number-average mol. weight of the cleaved graft polymer increased linearly with the monomer conversion. The presence of the polymer on the gold nanoparticle surface was verified by Fourier transform IR spectroscopy and TEM.  
 IT 7440-57-5P, Gold, preparation  
 (nanoparticle, initiator anchor; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)  
 RN 7440-57-5 HCAPLUS  
 CN Gold (CA INDEX NAME)

All

CC 35-3 (Chemistry of Synthetic High Polymers)

ST gold nanoparticle anchored initiator chloromethylphenylether trimethoxysilane methyl methacrylate polymer; composite nanoparticle ATRP initiator polymethyl methacrylate prepn high temp

IT Polymerization catalysts  
(atom transfer, radical, nanoparticle surface-anchored; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT Polymerization kinetics  
(atom transfer, radical; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT Self-assembled monolayers  
(preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT 4420-74-0, 3-Mercaptopropyltrimethoxysilane  
(hydrolyzed, surface anchoring monolayer; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT 7440-57-5P, Gold, preparation  
(nanoparticle, initiator anchor; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT 366-18-7, 2,2'-Bipyridyl 7758-89-6, Copper chloride (CuCl)  
(polymerization catalyst; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT 14337-12-3, Tetrachloroaurate  
(preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT 9011-14-7P, Poly(methyl methacrylate)  
(shell layer; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT 7631-86-9P, Silica, preparation  
(surface layer on gold nanoparticle; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT 73768-94-2, 11-Mercapto-1-undecanol  
(surface stabilization/functionalization reagent; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

IT 141813-16-3  
(surface-anchored initiator; preparation of gold-silica-poly(Me methacrylate) core-shell nanoparticles by surface-confined atom transfer radical polymerization at high temperature)

OS.CITING REF COUNT: 37 THERE ARE 37 CAPLUS RECORDS THAT CITE THIS RECORD (37 CITINGS)

REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR



THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L86 ANSWER 13 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2005:89125 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:305446  
 TITLE: Raman Mapping and In Situ SERS  
 Spectroelectrochemical Studies of 6-Mercaptopurine  
 SAMs on the Gold Electrode  
 AUTHOR(S): Yang, Haifeng; Liu, Yanli; Liu, Zhimin; Yang, Yu;  
 Jiang, Jianhui; Zhang, Zongrang; Shen, Guoli; Yu,  
 Ruqin  
 CORPORATE SOURCE: State Key Laboratory for Chemo/Biosensing and  
 Chemometrics, College of Chemistry and Chemical  
 Engineering, Hunan University, Changsha, 410082,  
 Peop. Rep. China  
 SOURCE: Journal of Physical Chemistry B (2005),  
 109(7), 2739-2744  
 CODEN: JPCBFK; ISSN: 1520-6106  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 02 Feb 2005  
 AB The self-assembled monolayers ( SAMs ) of 6-mercaptopurine (6MP) were formed at  
 the roughened polycryst. Au surfaces in acid and alkaline media. The time-  
 dependent Raman mapping spectral anal. in conjunction with the quantum calcs.  
 for the vibrational modes using ab initio BLYP/6-31G method suggested that  
 both of the resulted 6MP SAMs adopted the same adsorption mode through the S  
 atom of pyrimidine moiety and the N7 atom of the imidazole moiety anchoring  
 the Au surface in a vertical way. The in situ surface -enhanced Raman  
 scattering spectroelectrochem. experiment was conducted to examine the  
 stability of the SAMs at various bias potentials. The detaching process of  
 the 6MP SAMs from the surface involved one electron reduction as the voltage  
 was applied at .apprx.0.7 V vs. a standard calomel electrode.  
 IT 7440-57-5, Gold, uses  
 (Raman mapping and in situ SERS spectroelectrochem. studies of  
 mercaptopurine self-assembled  
 monolayers on gold electrode in acid and alkaline solns.)  
 RN 7440-57-5 HCAPLUS  
 CN Gold (CA INDEX NAME)  
 Au  
 CC 72-2 (Electrochemistry)  
 Section cross-reference(s): 22, 66, 73  
 ST Raman mapping SERS spectroelectrochem study mercaptopurine SAM  
 gold electrode; self assembled monolayer  
 mercaptopurine gold electrode Raman mapping  
 IT Self-assembled monolayers  
 Tautomers  
 (Raman mapping and in situ SERS spectroelectrochem. studies of  
 mercaptopurine self-assembled  
 monolayers on gold electrode in acid and alkaline solns.)  
 IT Desorption  
 (electrochem.; of mercaptopurine self-assembled  
 monolayers on gold electrode in acid and alkaline solns.)

IT Molecular orientation  
Raman spectra  
SERS (Raman scattering)  
(of mercaptopurine self-assembled  
monolayers on gold electrode in acid and alkaline solns.)

IT Reduction, electrochemical  
(of mercaptopurine self-assembled  
monolayers on gold electrode with desorption)

IT 7440-57-5, Gold, uses  
(Raman mapping and in situ SERS spectroelectrochem. studies of  
mercaptopurine self-assembled  
monolayers on gold electrode in acid and alkaline solns.)

IT 50-44-2, 6-Mercaptopurine  
(Raman mapping and in situ SERS spectroelectrochem. studies of  
mercaptopurine self-assembled  
monolayers on gold electrode in acid and alkaline solns.)

IT 7447-40-7, Potassium chloride, uses 7647-01-0, Hydrochloric acid,  
uses  
(Raman mapping and in situ SERS spectroelectrochem. studies of  
mercaptopurine self-assembled  
monolayers on gold electrode in solution of)

OS.CITING REF COUNT: 11 THERE ARE 11 CAPLUS RECORDS THAT CITE THIS  
RECORD (11 CITINGS)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L86 ANSWER 14 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2004:735233 HCAPLUS Full-text

DOCUMENT NUMBER: 141:431129

TITLE: Patterning molecular scale paramagnets  
at Au surfaces: A root to  
magneto-molecular-electronics

AUTHOR(S): Messina, Paolo; Mannini, Matteo; Sorace, Lorenzo;  
Rovati, Donella; Caneschi, Andrea; Gatteschi,  
Dante

CORPORATE SOURCE: INSTM: Laboratory for molecular magnetism,  
Florence, 50119, Italy

SOURCE: Los Alamos National Laboratory, Preprint Archive,  
Physics (2004) 1-3,  
arXiv:physics/0408095, 21 Aug 2004  
CODEN: LNPHF9  
URL: <http://xxx.lanl.gov/pdf/physics/0408095>

PUBLISHER: Los Alamos National Laboratory

DOCUMENT TYPE: Preprint

LANGUAGE: English

ED Entered STN: 09 Sep 2004

AB We propose the realization of self-assembled monolayers (SAM) of a particular  
stable organic radical. This radical is meant to be used as a standard mol.  
on which to prove the validity of a single spin reading procedure known as  
ESR-STM. We demonstrate here that the radical is chemical anchored at the  
surface, preserves its magnetic functionality and can be imaged by STM. STM  
and ESR investigation of the mol. film is reported. We also discuss a range  
of possible applications, further than ESR-STM, of magnetic monolayers of  
simple purely organic magnetic mols.

IT 7440-57-5, Gold, processes  
(film; self-assembled monolayer of  
nitronyl nitroxide Ph methylsulfide on gold surface and  
its magnetic functionality)

RN 7440-57-5 HCAPLUS

CN Gold (CA INDEX NAME)

AU

CC 77-6 (Magnetic Phenomena)  
 Section cross-reference(s): 66

ST gold self assembled monolayer nitroxide  
 radical patterning ESR STM

IT Chemisorption  
 ESR (electron spin resonance)  
 Scanning tunneling microscopy  
 Self-assembled monolayers  
 Surface structure  
 (self-assembled monolayer of nitronyl  
 nitroxide Ph methylsulfide on gold surface and its  
 magnetic functionality)

IT Mica-group minerals, processes  
 (substrate; self-assembled  
 monolayer of nitronyl nitroxide Ph methylsulfide on gold  
 surface and its magnetic functionality)

IT 7440-57-5, Gold, processes  
 (film; self-assembled monolayer of  
 nitronyl nitroxide Ph methylsulfide on gold surface and  
 its magnetic functionality)

IT 170879-87-5  
 (self-assembled monolayer of nitronyl  
 nitroxide Ph methylsulfide on gold surface and its  
 magnetic functionality)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L86 ANSWER 15 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2004:698619 HCAPLUS Full-text

DOCUMENT NUMBER: 141:371053

TITLE: Interfacial Observation of an Alkylsilane  
 Self-Assembled Monolayer  
 on Hydrogen-Terminated Si

AUTHOR(S): Shirahata, Naoto; Seo, Won-Seon; Kinoshita,  
 Takatoshi; Yonezawa, Tetsu; Hozumi, Atsushi;  
 Yokogawa, Yoshiyuki; Kameyama, Tetsuya; Masuda,  
 Yoshitake; Koumoto, Kunihiro

CORPORATE SOURCE: Department of Applied Chemistry, Graduate School  
 of Engineering, Nagoya University, Nagoya,  
 464-8603, Japan

SOURCE: Langmuir (2004), 20(20), 8942-8946  
 CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 27 Aug 2004

AB We have observed that octadecyltrichlorosilane self- assembled monolayer can  
 anchor onto a hydrated silicon surface. HR-TEM observation showed that no  
 silica interlayer formed between an SAM and silicon surface.

CC 66-4 (Surface Chemistry and Colloids)

ST octadecyltrichlorosilane self assembled

monolayer hydrogen terminated silicon surface structure

- IT Self-assembled monolayers  
(preparation of octadecyltrichlorosilane SAM on hydrogen-terminated silicon surface)
- IT Surface structure  
(preparation of octadecyltrichlorosilane SAM on hydrogen-terminated silicon surface and its)
- IT 7440-21-3D, Silicon, hydrogen-terminated, silylated  
(preparation of octadecyltrichlorosilane SAM on hydrogen-terminated silicon surface)
- IT 112-04-9D, Octadecyltrichlorosilane, silicon bound  
(preparation of octadecyltrichlorosilane SAM on hydrogen-terminated silicon surface)

OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)

REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 16 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2004:329835 HCAPLUS Full-text

DOCUMENT NUMBER: 141:38285

TITLE: Photochemical Patterning of a Self-Assembled Monolayer of 7-Diazomethylcarbonyl-2,4,9-trithiaadmantane on Gold Films via Wolff Rearrangement

AUTHOR(S): Hu, Jun; Liu, Yubiao; Khemtong, Chalermchai; El Khoury, Jouliana M.; McAfoos, Timothy J.; Taschner, Ian S.

CORPORATE SOURCE: Department of Chemistry, The University of Akron, Akron, OH, 44325-3601, USA

SOURCE: Langmuir (2004), 20(12), 4933-4938  
CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 141:38285

ED Entered STN: 23 Apr 2004

AB Photolithog. attachment of functional organic mols. via ester or amide linkages to self-assembled monolayers (SAMs) on gold thin films was achieved by employing a novel photoreactive surface anchor, 7-diazomethylcarbonyl-2,4,9-trithiaadmantane. The photoreactive SAM was prepared by the spontaneous phys. adsorption of the photoreactive surface anchor onto gold surfaces. The  $\alpha$ -diazo ketone moiety of the SAM was found to display the classical Wolff rearrangement reactivity to produce a ketene intermediate on the exposed area. Organic mols. such as alcs. and amines can thus be attached to the gold surfaces selectively by the facile in situ formation of ester or amide linkages. The structure and reactivity of the photoreactive surface anchor were characterized by real-time FT-IR, fluorescence, and polarization modulation IR reflectance absorption spectroscopy (PM-IRRAS). The Wolff rearrangement reactivity of the SAM suggested that a "surface -isolated" carbonylcarbene may be generated when the SAM was exposed to 255-nm irradiation

CC 22-8 (Physical Organic Chemistry)

Section cross-reference(s): 66

ST photochem patterning self assembled diazo monolayer gold  
Wolff rearrangement

IT Conformation

(of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane in crystal and

- SAM; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT Fluorescence (of surface-anchored pyrene; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT Surface reaction (photochem. Wolff rearrangement; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT Self-assembled monolayers (photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT Wolff rearrangement (photochem.; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT Trapping (photolithog. via amine and alc. trapping of ketene intermediate; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT Photolithography (via amine and alc. trapping of ketene intermediate; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT 701216-28-6P (conversion to acid chloride; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT 701216-29-7P (diazomethylation and amidation; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT 334-88-3, Diazomethane (diazomethylation of acid chloride; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT 701216-33-3 (formation and fluorescence on surface; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)
- IT 701216-34-4 (formation as surface trapping product; photochem.

patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)

IT 701216-32-2 (formation on surface; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)

IT 701216-31-1P (preparation in bulk; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)

IT 701216-27-5 (saponification; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)

IT 701216-30-0P (self assembly into monolayer on gold and subsequent surface photolysis; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)

IT 7440-57-5, Gold, uses (surface; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)

IT 124-30-1, n-Octadecylamine 24463-15-8, 1-(Hydroxymethyl)pyrene (trapping of surface-bound ketene intermediate; photochem. patterning of self-assembled monolayer of 7-diazomethylcarbonyl-2,4,9-trithiaadmantane on gold films via Wolff photorearrangement followed by ketene trapping)

OS.CITING REF COUNT: 16 THERE ARE 16 CAPLUS RECORDS THAT CITE THIS RECORD (16 CITINGS)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 17 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2003:965578 HCAPLUS Full-text

DOCUMENT NUMBER: 140:153395

TITLE: Diverse Redox-Active Molecules Bearing Identical Thiol-Terminated Tripodal Tethers for Studies of Molecular Information Storage

AUTHOR(S): Wei, Lingyun; Padmaja, Kisari; Youngblood, W. Justin; Lysenko, Andrey B.; Lindsey, Jonathan S.; Bocian, David F.

CORPORATE SOURCE: Department of Chemistry, University of California, Riverside, CA, 92521-0403, USA

SOURCE: Journal of Organic Chemistry (2004), 69(5), 1461-1469

CODEN: JOCEAH; ISSN: 0022-3263

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 11 Dec 2003

AB To examine the effects of mol. structure on charge storage in self-assembled monolayers (SAMs), a family of redox-active mols. was prepared wherein each mol. bears a tether composed of a tripodal linker with 3 protected thiol groups for surface attachment. The redox-active mols. include ferrocene, Zn porphyrin, ferrocene-Zn porphyrin, Mg phthalocyanine, and triple-decker lanthanide sandwich coordination compds. The tripodal tether is based on a tris[4-(S-acetylthiomethyl)phenyl]-derivatized methane. Each redox-active unit is linked to the methane vertex by a 4,4'-diphenylethyne unit. The electrochem. characteristics of each compound were examined in solution and in SAMs on Au. Redox-kinetic measurements were also performed on the SAMs (with the exception of the Mg phthalocyanine) to probe (1) the rate of electron transfer in the presence of an applied potential and (2) the rate of charge dissipation after the applied potential is disconnected. The electrochem. studies of the SAMs indicate that the tripodal tether provides a more robust anchor to the Au surface than does a tether with a single site of attachment. However, the electron-transfer and charge-dissipation characteristics of the 2 tethers are generally similar. Probably the tripodal tether offers superior stability characteristics without sacrificing electrochem. performance.

IT 7440-57-5, Gold, uses  
(cyclic voltammetry of diverse redox-active mols. bearing identical thiol-terminated tripodal tether self-assembled monolayers on gold in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

RN 7440-57-5 HCAPLUS

CN Gold (CA INDEX NAME)

Au

CC 72-2 (Electrochemistry)  
Section cross-reference(s): 29, 37, 66, 78

IT Cyclic voltammetry  
Self-assembled monolayers  
(cyclic voltammetry of diverse redox-active mols. bearing identical thiol-terminated tripodal tether self-assembled monolayers on gold in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT Redox reaction  
Redox reaction kinetics  
(electrochem.; of diverse redox-active mols. bearing identical thiol-terminated tripodal tether self-assembled monolayers on gold in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT Electron transfer kinetics  
Redox potential  
(of diverse redox-active mols. bearing identical thiol-terminated tripodal tether self-assembled monolayers on gold in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT 7440-57-5, Gold, uses  
(cyclic voltammetry of diverse redox-active mols. bearing identical thiol-terminated tripodal tether self-assembled monolayers on gold in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT 3109-63-5, Tetrabutylammonium hexafluorophosphate  
(cyclic voltammetry of diverse redox-active mols. bearing identical thiol-terminated tripodal tether self-assembled monolayers on gold in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

OS.CITING REF COUNT: 77 THERE ARE 77 CAPLUS RECORDS THAT CITE THIS RECORD (78 CITINGS)

REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L86 ANSWER 18 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2004:325302 HCAPLUS Full-text

DOCUMENT NUMBER: 141:43422

TITLE: Planned Nanostructures of Colloidal Gold via  
Self-Assembly on Hierarchically Assembled Organic  
Bilayer Template Patterns with In-situ  
Generated Terminal Amino Functionality

AUTHOR(S): Liu, Shantang; Maoz, Rivka; Sagiv, Jacob

CORPORATE SOURCE: Department of Materials and Interfaces, The  
Weizmann Institute of Science, Rehovot, 76100,  
Israel

SOURCE: Nano Letters (2004), 4(5), 845-851

CODEN: NALEFD; ISSN: 1530-6984

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 22 Apr 2004

AB We demonstrate a hierarchical self-assembly approach to the fabrication of  
planned nanostructures of colloidal gold particles on silicon, comprising the  
initial assembly of a mol. template pattern with terminal amino functionality,  
which then guides the surface assembly and site specific anchoring of gold  
nanoparticles from a colloidal solution. Well defined amino-terminated  
templates are obtained via a chemical functionalization process whereby highly  
ordered bilayer nanopatterns produced by constructive nanolithog. (Maoz, R.;  
Frydman, E.; Cohen, S. R.; Sagiv, J. Adv. Mater. 2000, 12, 725-731) are in-  
situ modified to generate the top amine functions. This novel approach offers  
promising performance in terms of the precision, reproducibility, and  
structural robustness needed for the advancement of a reliable bottom-up  
nanofabrication methodol.

IT 7440-57-5, Gold, properties  
(nanofabrication of gold nanoparticle on functionalized silicon  
surface with self-assembled  
monolayer)

RN 7440-57-5 HCAPLUS

CN Gold (CA INDEX NAME)

Au

CC 66-6 (Surface Chemistry and Colloids)  
ST nanofabrication gold nanoparticle functionalized silicon  
surface self assembled monolayer

IT Nanoparticles  
Self-assembled monolayers  
Surface structure  
(nanofabrication of gold nanoparticle on functionalized silicon  
surface with self-assembled  
monolayer)

IT 112-04-9D, Octadecyltrichlorosilane, silicon bound, polymerized  
7440-21-3D, Silicon, silylated  
(nanofabrication of gold nanoparticle on functionalized silicon  
surface with self-assembled  
monolayer)

IT 125282-19-1D, 18-Nonadecyltrichlorosilane, octadecyltrichlorosilane  
bound, polymerized



(nanofabrication of gold nanoparticle on functionalized silicon surface with self-assembled monolayer)

IT 7440-57-5, Gold, properties  
(nanofabrication of gold nanoparticle on functionalized silicon surface with self-assembled monolayer)

OS.CITING REF COUNT: 121 THERE ARE 121 CAPLUS RECORDS THAT CITE THIS RECORD (123 CITINGS)

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 19 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2003:623217 HCAPLUS Full-text

DOCUMENT NUMBER: 139:292752

TITLE: Y-Shaped Polymer Brushes: Nanoscale Switchable Surfaces

AUTHOR(S): Julthongpiput, Duangrut; Lin, Yen-Hsi; Teng, Jing; Zubarev, Eugene R.; Tsukruk, Vladimir V.

CORPORATE SOURCE: Department of Materials Science Engineering, Iowa State University, Ames, IA, 50011, USA

SOURCE: Langmuir (2003), 19(19), 7832-7836  
CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 14 Aug 2003

AB Nanoscale surface structures were observed, of segregated pinned micelles of grafted Y-shaped mols. which undergo reversible structural reorganization. The Y-shaped mols. were designed by combining two highly incompatible, i.e., hydrophobic and hydrophilic polymer chains (arms) attached to a single focal point capable of chemical grafting to a self-assembled monolayer of epoxysilane as functionalized silicon surface. The Y-shaped mols. comprise a polystyrene (PS) arm containing about 40 monomeric units and poly(tert-Bu acrylate) (PBA) arm containing 30 units and 3,5-dihydroxybenzoic acid is used as AB2 anchoring moiety on Si to which carboxy-terminated PS and PBA were attached. Spatial constraints induced by the chemical bonding of two dissimilar (hydrophobic and hydrophilic) polymer arms in such Y-shaped mols. lead to the formation of segregated pinned micellar structures in chemical grafted brush layers; post-grafting hydrolysis of the PBA arms was conducted under acidic conditions. The final Y-shaped brush layers are composed of amphiphilic mols. with a volume ratio of PS and poly(acrylic acid) (PAA) arms of approx. 60:40. A model is proposed, of segregated pinned micelles and corresponding reverse micelles featuring different segregation states of polystyrene and poly(acrylic acid) arms. These arms are capable of local reversible rearrangements leading to reversible surface structural reorganization in different solvents.

CC 36-6 (Physical Properties of Synthetic High Polymers)  
Section cross-reference(s): 66

ST polystyrene tertbutyl acrylate polymer Y brush arm bonding surface; silicon epoxysilane self assembled monolayer silicon nanosurface; pinning micelle hydrophobic hydrophilic arm dihydroxybenzoic acid

IT Contact angle  
Hydrophilicity  
Hydrophobicity  
Polymer morphology  
Self-assembled monolayers  
(Y-shaped hydrophobic/hydrophilic polymer brush micelles)

anchored on silicon forming nanoscale solvent-switchable surfaces)

IT Amphiphiles  
Nanostructures  
(Y-shaped layers; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT Micelles  
(Y-shaped; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT Polymers, processes  
(graft, brush, surface anchored; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT Surface structure  
(superstructure, switchable; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT Superlattices  
(surface, switchable; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 99-10-5D, 3,5-Dihydroxybenzoic acid, reaction products with carboxy-terminated polystyrene and with polyacrylic acid (anchoring compound; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 7440-21-3D, Silicon, epoxysilane surface compds.  
(anchoring substrate; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 25232-27-3D, Poly(tert-butyl acrylate), hydrolysis products, carboxy-terminated, reaction products with dihydroxybenzoic acid (hydrophilic arm in Y-brush micelles; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 9003-53-6D, Polystyrene, carboxy-terminated, reaction products with dihydroxybenzoic acid (hydrophobic arm in Y-brush micelles; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

IT 108-88-3, Toluene, uses 7732-18-5, Water, uses (switching solvent; Y-shaped hydrophobic/hydrophilic polymer brush micelles anchored on silicon forming nanoscale solvent-switchable surfaces)

OS.CITING REF COUNT: 79 THERE ARE 79 CAPLUS RECORDS THAT CITE THIS RECORD (81 CITINGS)

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 20 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
ACCESSION NUMBER: 2002:928424 HCAPLUS [Full-text](#)  
DOCUMENT NUMBER: 138:138320  
TITLE: Synthesis of Free-Standing Quasi-Two-Dimensional Polymers  
AUTHOR(S): Stroock, Abraham D.; Kane, Ravindra S.; Weck, Marcus; Metallo, Steven J.; Whitesides, George M.  
CORPORATE SOURCE: Department of Chemistry and Chemical Biology,

SOURCE: Harvard University, Cambridge, MA, 02138-2902, USA  
 Langmuir (2003), 19(6), 2466-2472  
 CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 08 Dec 2002

AB This paper describes a synthesis of free-standing, 10-15-nm-thick polymer films of well-defined lateral size and shape. The three key elements of this procedure are (1) formation by microcontact printing ( $\mu$ CP) of a patterned, self-assembled monolayer (SAM) with hydrophobic regions (alkane-terminated) and adsorption-resistant regions (oligo(ethylene oxide)-terminated); (2) initiation of spatially selective growth of films of poly(electrolyte) multilayers by adsorption on the hydrophobic regions of the patterned SAM; and (3) dry transfer of these films to a water-soluble sacrificial backing, from which the films can be released into solution. This technique exploits the hydrophobic effect as an interaction that can be switched off when it is not needed: during the growth of the films in aqueous buffer, the hydrophobic effect anchors the polymers to the surface; once these films have been dried after synthesis, they are bound to the substrate only by van der Waals interactions and can be transferred nondestructively to a sacrificial backing. The growth and final state of the films were characterized using surface plasmon resonance (SPR), polarized IR external reflectance spectroscopy (PIERS), ellipsometry, fluorescence microscopy, and atomic force microscopy (AFM).

CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 35, 73, 74

IT Multilayers  
 Plastic films  
 Self-assembled monolayers  
 (in preparation of free-standing quasi-two-dimensional polymer films)

IT Lithography  
 (microcontact printing; in preparation of free-standing quasi-two-dimensional polymer films)

IT Polymer morphology  
 Surface plasmon resonance  
 Thickness  
 (of free-standing quasi-two-dimensional polymer films)

IT 2917-26-2, Hexadecanethiol 9002-98-6D, Poly(ethylenimine), coupled with fluorescein 26913-06-4D, Poly(ethylenimine), coupled with fluorescein 27072-45-3D, Fluorescein isothiocyanate, coupled with poly(ethylenimine) 106209-33-0, Maleic anhydride-styrene alternating copolymer 130727-41-2  
 (in preparation of free-standing quasi-two-dimensional polymers)

IT 9003-01-4, Poly (acrylic acid)  
 (in preparation of free-standing quasi-two-dimensional polymers)

IT 9016-00-6, Poly(dimethylsiloxane) 31900-57-9, Dimethylsilanediol homopolymer  
 (stamp; in preparation of free-standing quasi-two-dimensional polymers)

OS.CITING REF COUNT: 41 THERE ARE 41 CAPLUS RECORDS THAT CITE THIS RECORD (42 CITINGS)

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ACCESSION NUMBER: 2003:98164 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:261146  
 TITLE: Precise Positioning of Nanoparticles on Surfaces Using Scanning Probe Lithography  
 AUTHOR(S): Garno, Jayne C.; Yang, Yiyun; Amro, Nabil A.; Cruchon-Dupeyrat, Sylvain; Chen, Shaowei; Liu, Gang-Yu  
 CORPORATE SOURCE: Department of Chemistry, University of California, Davis, CA, 95616, USA  
 SOURCE: Nano Letters (2003), 3(3), 389-395  
 CODEN: NALEFD; ISSN: 1530-6984  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 09 Feb 2003

AB Two new methods have been developed to precisely position gold nanoparticles on surfaces. The surface-active nanoparticles have a shell of a mixed monolayer comprised of alkanethiol and alkanedithiol moieties to anchor particles to gold surfaces via sulfur-gold chemisorption. In the first method, regions of an alkanethiol self-assembled monolayer (SAM) are shaved by the AFM tip under high force in a solution containing nanoparticles. Nanoparticles then adsorb onto the exposed areas defined by the shaving track of the tip. In a second method, the AFM tip is coated with nanoparticles. Under low force, AFM images are acquired and the nanoparticles remain on the tip. When higher load is applied, areas of the SAM matrix are uncovered and nanoparticles are deposited following the scanning track of the AFM tip. Thus, the 3D positions of the nanoparticles are precisely controlled. The nanostructures are characterized in situ with the same tip at reduced load. Individual particles within the nanopatterns can be resolved by AFM. In both methods, the matrix SAM effectively resists the nonspecific binding of nanoparticles, and prevents lateral diffusion of nanoparticles. The high spatial precision offered by AFM lithog. is advantageous for fabrication of nanoparticle-based nanodevices.

CC 66-6 (Surface Chemistry and Colloids)  
 ST fabrication gold nanoparticle surface scanning probe lithog  
 IT Surface structure  
     (AFM images; positioning of gold nanoparticle on gold surface studied using)  
 IT Nanoparticles  
     (positioning of gold nanoparticle on gold surface)  
 IT Lithography  
     (scanning probe; positioning of gold nanoparticle on gold surface using)  
 IT 7440-57-5D, Gold, thiolated  
     (nanoparticle; positioning of gold nanoparticle on gold surface)  
 IT 112-55-0D, 1-Decanethiol, gold bound 143-10-2D, 1-Decanethiol, gold bound 2917-26-2D, 1-Hexadecanethiol, gold bound  
     (positioning of gold nanoparticle on gold surface)  
 IT 7440-57-5, Gold, properties  
     (substrate; positioning of gold nanoparticle on gold surface)

OS.CITING REF COUNT: 67 THERE ARE 67 CAPLUS RECORDS THAT CITE THIS RECORD (68 CITINGS)  
 REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 22 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2003:990392 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:112075

TITLE: Light-induced reversible wetting of structured surfaces

AUTHOR(S): Richards, Nicola; Ralston, John; Reynolds, Geoffrey

CORPORATE SOURCE: Ian Wark Research Institute, University of South Australia, Mawson Lakes, South Australia, 5095, Australia

SOURCE: Contact Angle, Wettability and Adhesion (2003), 3, 361-372  
CODEN: CAAWAA

PUBLISHER: VSP BV

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 21 Dec 2003

AB Derivatized 2,4-diketopyrimidine groups were anchored onto planar Au surfaces as self-assembled monolayers (SAMs) for chemical and photochem. studies. Three derivs. 5-methyluracil (thymine), 5-trifluoromethyluracil, and 5-nitrouracil were chosen for the specific moiety at position C-5, which can exert different inductive effects on the adjacent aromatic ring. The measured acidity constant decreases from 5-methyluracil to 5-nitrouracil as the inductive properties of the group at C-5 position increase. When grafted to the surface the acidity constant increases, albeit still obeying the expected inductive trend. The functionality also exerts an influence on the surface wetting properties. Surface wettabilities indicate that the orientation of the pyrimidine groups at the surface occurs so that the C-5 position has a direct effect upon the surface chemical. Upon dimerization by irradiation with UV light the surface contact angle increases significantly. The contact angle changes reflect that the dimer has a different surface charge than the monomer and a substantially different conformation leading to light induced changes in contact angle of up to 22°.

IT 7440-57-5D, Gold, thiolated  
(light-induced reversible wetting of derivatized diketopyrimidine groups anchored on Au surface as self-assembled monolayers)

RN 7440-57-5 HCAPLUS

CN Gold (CA INDEX NAME)

Au

CC 66-4 (Surface Chemistry and Colloids)

ST light induced reversible wetting structured surface; uracil deriv self assembled monolayer surface acidity

IT Contact angle  
Self-assembled monolayers  
(light-induced reversible wetting of derivatized diketopyrimidine groups anchored on Au surface as self-assembled monolayers)

IT Wettability  
(light-induced reversible wetting of structured surfaces)

IT Surface acidity  
(of derivatized diketopyrimidine groups anchored on Au surface as self-assembled monolayers)

IT Dimerization  
(photodimerization; of derivatized diketopyrimidine groups)

anchored on Au surface as self-  
assembled monolayers)

IT 7440-57-5D, Gold, thiolated 88946-41-2D, gold-bound  
720467-71-0D, gold-bound 720467-98-1D, gold-bound  
(light-induced reversible wetting of derivatized diketopyrimidine  
groups anchored on Au surface as self  
-assembled monolayers)

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS  
RECORD (4 CITINGS)  
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L86 ANSWER 23 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:953944 HCAPLUS Full-text

DOCUMENT NUMBER: 138:293282

TITLE: Application of a high-resolution SPR technique for  
monitoring real-time metal/dielectric interactions  
AUTHOR(S): Mulchan, Neil M.; Rodriguez, Melvin; O'Shea,  
Kevin; Darici, Yesim

CORPORATE SOURCE: Department of Physics, Florida International  
University, Miami, FL, 33199, USA

SOURCE: Sensors and Actuators, B: Chemical (2003  
, B88(2), 132-137  
CODEN: SABCEB; ISSN: 0925-4005

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 17 Dec 2002

AB The authors present a high-sensitivity (1  $\mu$ s,) high-resolution (10-5 to 10-8  
refractive index units (RIU)) method for monitoring the real-time mol.  
interactions at a metal/dielec. interface. Surface plasmon resonance (SPR)  
spectroscopy is a surface anal. technique for detecting and characterizing  
mol./metal interactions. The technique is based on attenuated total  
reflection (ATR) and uses changes in the refractive index at a dielec./metal  
interface to monitor mol. adsorption. The authors studied the adsorption  
rates of 3 concns. of the synthesized organic mol. dinaphtho[2,1-c:1',2'-  
e][1,2]dithiin self-assembled on an Au(111) surface. This mol. is of interest  
because its chiral structure and response to optical stimulation when chemical  
anchored to a metal surface make it a desirable candidate for studying its  
photoswitching properties. Results were in agreement with theor. predictions  
on the process of chemical mol. adsorption on metal surfaces that predicted a  
2-stage adsorption process, with the 1st stage being relatively short (on the  
order of minutes) and dependent on solution concentration. SPR spectroscopy is  
a relatively simple method of anal. and it involves portable equipment  
compared to alternative surface anal. techniques such as angle scan methods.  
In future expts., the authors will use the technique described in this paper  
to exploit the optical response properties of the synthesized mol. used.

IT 7440-57-5, Gold, properties  
(adsorption rates of synthesized organic mol. self-assembled on Au  
surface)

RN 7440-57-5 HCAPLUS

CN Gold (CA INDEX NAME)

CC 66-5 (Surface Chemistry and Colloids)  
 Section cross-reference(s): 76

ST SPR metal dielec real time interaction; adsorption dinaphthodithiin  
 self assembled monolayer gold  
 surface SPR

IT Chemisorption  
 Self-assembled monolayers  
 (adsorption rates of synthesized organic mol. self-assembled on Au  
 surface)

IT Surface plasmon resonance  
 (application of high-resolution SPR technique for monitoring real-time  
 metal/dielec. interactions)

IT 188-57-8, Dinaphtho[2,1-c:1',2'-e][1,2]dithiin 7440-57-5,  
 Gold, properties  
 (adsorption rates of synthesized organic mol. self-assembled on Au  
 surface)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L86 ANSWER 24 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:983744 HCAPLUS Full-text

DOCUMENT NUMBER: 138:261041

TITLE: Surface structure and anchoring  
 properties of modified self-  
 assembled monolayers

AUTHOR(S): Fonseca, Joao G.; Hommet, Jean; Galerne, Yves

CORPORATE SOURCE: Centro de Fisica da Materia Condensada,  
 Universidade de Lisboa, Lisbon, P-1649-003, Port.

SOURCE: Applied Physics Letters (2003), 82(1),  
 58-60

CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 31 Dec 2002

AB The surface structure of plasma-modified self- assembled monolayers is studied  
 by XPS. The measurements show that the oxygen postplasma gas produces gradual  
 chemical modifications in a pure polyethylene-type monolayer. Different  
 oxygenated functions are observed and quant., they are measured to be denser  
 at shorter distances from the plasma source. Used as liquid crystal alignment  
 layers, these surfaces present a fast transition between the homeotropic and  
 planar anchorings. The average distance between the oxygen atoms on the  
 organic layer is found to be .apprx.6-10 Å at the anchoring transition.

CC 66-3 (Surface Chemistry and Colloids)

Section cross-reference(s): 75

ST plasma modification octadecyltrichlorosilane self  
 assembled monolayer surface structure  
 anchoring

IT Liquid crystals

(alignment layers for; surface structure and  
 anchoring properties of modified self-  
 assembled monolayers)

IT Liquid crystal displays

Self-assembled monolayers

Surface reaction

Surface structure

Surface treatment

(surface structure and anchoring properties of  
 modified self-assembled monolayers)

IT Plasma  
(surface treatment; surface structure and anchoring properties of modified self-assembled monolayers)

IT 7727-37-9, Nitrogen, processes 7782-44-7, Oxygen, processes  
(plasma; surface structure and anchoring properties of modified self-assembled monolayers)

IT 112-04-9, Octadecyltrichlorosilane  
(self-assembled monolayers; surface structure and anchoring properties of modified self-assembled monolayers)

IT 50926-11-9, ITO  
(substrate; surface structure and anchoring properties of modified self-assembled monolayers)

IT 40817-08-1, 5CB  
(surface structure and anchoring properties of modified self-assembled monolayers)

IT 9002-88-4, Polyethylene  
(surface treatment; surface structure and anchoring properties of modified self-assembled monolayers)

OS.CITING REF COUNT: 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 25 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:746546 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 137:389555

TITLE: Fabrication of Self-Assembled Mono- and Multilayered Thin Films via Step-by-Step Deposition of Sn(Net2)4 and Dialkyne Terminated Chromophores on Silica Based Surfaces

AUTHOR(S): Yam, Chi Ming; Dickie, Adam J.; Kakkar, Ashok K.

CORPORATE SOURCE: Department of Chemistry, McGill University, Montreal, QC, H3A 2K6, Can.

SOURCE: Langmuir (2002), 18(22), 8481-8487

CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 03 Oct 2002

AB Acid-base hydrolytic chemical of surface anchored [Sn]-NET2 moieties with dialkyne terminated mols. has been used to construct close packed thin films of good structural quality on Si(100)/(Si/SiO2) substrates. The surface coverage in these thin films was found to be 2-7 mols./100 Å<sup>2</sup>. An elaboration of this methodol. to a layer-by-layer deposition process using Sn(Net2)4 and 1,9-decadiyne or p-diethynylbenzene led to thin film structures of up to five layers. The evolution of thin films in the step-by-step fabrication was monitored by contact angle goniometry, ellipsometry, XPS, FTIR-ATR, and UV-vis absorption spectroscopy. Topochem. polymerization on a thin film of p-bis(butadiynyl)benzene was achieved by exposure to UV-vis radiation, giving a blue film. Cobalt carbonyl could be easily adsorbed on these alkynyl thin films under room-temperature conditions.

CC 66-3 (Surface Chemistry and Colloids)

ST SAM multilayered thinfilm stepwise deposition dialkyne



- terminated chromophore
- IT Chromophores  
(dialkyne terminated; fabrication of SAM and multilayered thinfilms of dialkyne terminated chromophores and adsorption of cobalt carbonyl)
- IT Adsorption  
Self-assembled monolayers  
(fabrication of SAM and multilayered thinfilms of dialkyne terminated chromophores and adsorption of cobalt carbonyl)
- IT IR spectra  
UV and visible spectra  
X-ray photoelectron spectra  
(fabrication of SAM and multilayered thinfilms of dialkyne terminated chromophores studied using)
- IT Films  
(multilayered; fabrication of SAM and multilayered thinfilms of dialkyne terminated chromophores and adsorption of cobalt carbonyl)
- IT Thickness  
(of SAM and multilayered thinfilms of dialkyne terminated chromophores)
- IT Contact angle  
(of water on SAM and multilayered thinfilms of dialkyne terminated chromophores)
- IT 105-05-5, p-Diethylbenzene 628-16-0, 1,5-Hexadiyne 871-84-1, 1,7-Octadiyne 1720-38-3, 1,9-Decadiyne 2396-65-8, 1,8-Nonadiyne 18512-55-5 141135-35-5  
(chromophore; fabrication of SAM and multilayered thinfilms of dialkyne terminated chromophores and adsorption of cobalt carbonyl)
- IT 37264-96-3, Cobalt carbonyl  
(fabrication of SAM and multilayered thinfilms of dialkyne terminated chromophores and adsorption of cobalt carbonyl)
- IT 7631-86-9, Silica, uses  
(substrate; fabrication of SAM and multilayered thinfilms of dialkyne terminated chromophores and adsorption of cobalt carbonyl)

OS.CITING REF COUNT: 16 THERE ARE 16 CAPLUS RECORDS THAT CITE THIS RECORD (16 CITINGS)

REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 26 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:242904 HCAPLUS Full-text

DOCUMENT NUMBER: 136:391483

TITLE: Monolayers as Models for Supported Catalysts: Zirconium Phosphonate Films Containing Manganese(III) Porphyrins

AUTHOR(S): Benitez, Isa O.; Bujoli, Bruno; Camus, Laurent J.; Lee, Christine M.; Odobel, Fabrice; Talham, Daniel R.

CORPORATE SOURCE: Department of Chemistry, University of Florida, Gainesville, FL, 32611-7200, USA

SOURCE: Journal of the American Chemical Society ( 2002), 124(16), 4363-4370  
CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 02 Apr 2002

AB Organized monolayer films of a manganese tetraphenylporphyrin have been prepared and used as supported oxidation catalysts. Manganese 5,10,15,20-tetrakis(tetrafluorophenyl-4'-octadecyloxyphosphonic acid) porphyrin (1) has been immobilized as a monolayer film by a combination of Langmuir-Blodgett (LB) and self-assembled monolayer techniques that use zirconium phosphonate linkages to bind the mol. to the surface. Anal. by FTIR, XPS, UV-vis and polarized optical spectroscopy show that the films consist of noninteracting mols. effectively anchored and oriented nearly parallel to the surface. The monolayer films are stable to the solvent and temperature conditions needed to explore organic oxidns. The activity of films of 1 toward the epoxidn. of cyclooctene using iodosylbenzene as the oxidant was compared to that of Manganese 5,10,15,20-tetrakis(pentafluorophenyl) porphyrin (2) and 1 under equivalent homogeneous conditions. The immobilized porphyrin 1 shows an enhanced activity relative to either homogeneous reaction. The main difference between 1 and 2 is the four alkyl phosphonate arms in 1 designed to incorporate the porphyrin within the films. The increased activity of immobilized 1 is a combination of the porphyrin structure, which prohibits the formation of  $\mu$ -oxo dimers even in solution, and a change in conformation when anchored to the surface. The study demonstrates that careful monolayer studies can provide useful models for the design and study of supported mol. catalyst systems.

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)  
Section cross-reference(s): 66

OS.CITING REF COUNT: 55 THERE ARE 55 CAPLUS RECORDS THAT CITE THIS RECORD (55 CITINGS)

REFERENCE COUNT: 78 THERE ARE 78 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 27 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:683843 HCAPLUS Full-text

DOCUMENT NUMBER: 137:389503

TITLE: Anchoring and orientational wetting of nematic liquid crystals on semi-fluorinated self-assembled monolayer surfaces

AUTHOR(S): Alkhaieralla, B.; Boden, N.; Cheadle, E.; Evans, S. D.; Henderson, J. R.; Fukushima, H.; Miyashita, S.; Schonherr, H.; Vancso, G. J.; Colorado, R., Jr.; Graupe, M.; Shmakova, O. E.; Lee, T. R.

CORPORATE SOURCE: Centre for Self-Organising Molecular Systems, University of Leeds, Leeds, LS2 9JT, UK

SOURCE: Europhysics Letters (2002), 59(3), 410-416  
CODEN: EULEEJ; ISSN: 0295-5075

PUBLISHER: EDP Sciences

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 10 Sep 2002

AB We demonstrate that it is possible to achieve exceptionally fine control over the anchoring of liquid crystals via the use of semi-fluorinated self-assembled monolayers of varying spacer length. We use this approach to map the detailed shape of an anchoring transition surface in thermodyn. phase space and to explore the links between anchoring and orientational wetting phenomena. These results allow one to design a substrate that will place a standard liquid-crystal film arbitrarily close to an anchoring transition between homeotropic and planar anchoring.

CC 66-2 (Surface Chemistry and Colloids)

ST anchoring wetting orientational nematic LC SAM

semifluorinated  
 IT Surface structure  
   (BAM and AFM images; anchoring and orientational wetting  
   of nematic LCs on semi-fluorinated SAM surfaces  
   studied using)  
 IT Liquid crystals  
   (anchoring and orientational wetting of nematic LCs on  
   semi-fluorinated SAM surfaces)  
 IT Contact angle  
   (anchoring and orientational wetting of nematic LCs on  
   semi-fluorinated SAM surfaces studied using)  
 IT Wetting  
   (orientational; anchoring and orientational wetting of nematic LCs  
   on semi-fluorinated SAM surfaces)  
 IT Self-assembled monolayers  
   (semi-fluorinated; anchoring and orientational wetting of nematic  
   LCs on semi-fluorinated SAM surfaces)  
 IT 40817-08-1, 5CB 41122-70-7, 6CB  
   (liquid crystal; anchoring and orientational wetting of nematic LCs  
   on semi-fluorinated SAM surfaces)  
 IT 34451-28-0 179925-13-4 213674-82-9 213674-90-9 215032-30-7  
   223270-64-2 273221-88-8 289482-51-5  
   (to prepare semi-fluorinated SAM)  
 OS.CITING REF COUNT: 13 THERE ARE 13 CAPLUS RECORDS THAT CITE THIS  
   RECORD (13 CITINGS)  
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR  
   THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
   RE FORMAT

L86 ANSWER 28 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:840744 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 138:159243

TITLE: Creation and characterization of n-alkylthiol and  
 n-alkylamine self-assembled  
 monolayers on 316L stainless steel

AUTHOR(S): Ruan, Chuan-Min; Bayer, Thomas; Meth, Sergio;  
 Sukenik, Chaim N.

CORPORATE SOURCE: Department of Chemistry, Bar Ilan University,  
 Ramat Gan, 52900, Israel

SOURCE: Thin Solid Films (2002), 419(1-2),  
 95-104

CODEN: THSFAP; ISSN: 0040-6090

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 05 Nov 2002

AB Self-assembled monolayers (SAMs) of straight-chain alkylthiols and  
 alkylamines (CnH2n+1SH/NH2; n=10, 12, 16, 18) are adsorbed from solution onto  
 the electrochem. reduced (oxide-free) surface of 316L stainless steel. The  
 SAMs were characterized using XPS, contact angle measurements and Fourier  
 transform IR spectroscopy. While thiol and (to a lesser extent) amine  
 anchored coatings have been reported on iron and other metals, this work  
 constitutes a new approach to the surface modification of stainless steel.  
 This coating approach was further extended by depositing  $\alpha,\omega$ -hydroxythiols to  
 create a thin film with a hydroxyl-rich surface. This new surface was then  
 used to anchor a siloxane-based second layer.

CC 66-3 (Surface Chemistry and Colloids)

ST alkylthiol alkylamine SAM stainless steel

IT Self-assembled monolayers  
 (SAMs of alkylthiols and alkylamines on stainless steel)

surface)

IT Contact angle  
X-ray photoelectron spectra  
(SAMS of alkylthiols and alkylamines on stainless steel surface studied using)

IT Surface structure  
(SEM images; SAMS of alkylthiols and alkylamines on stainless steel surface studied using)

IT IR reflectance spectra  
(attenuated total; SAMS of alkylthiols and alkylamines on stainless steel surface studied using)

IT 112-04-9, Octadecyltrichlorosilane 112-55-0, 1-Dodecanethiol  
112-92-5, Octadecanol 124-22-1, 1-Dodecylamine 124-30-1,  
Octadecylamine 143-10-2, 1-Decanethiol 143-27-1, 1-Hexadecylamine  
2016-57-1, 1-Decylamine 2885-00-9, Octadecylmercaptan 2917-26-2,  
1-Hexadecanethiol 3069-42-9, Octadecyltrimethoxysilane 73768-94-2,  
11-Mercapto-1-undecanol  
(SAMS of alkylthiols and alkylamines on stainless steel surface)

IT 11134-23-9  
(SAMS of alkylthiols and alkylamines on stainless steel surface)

OS.CITING REF COUNT: 31 THERE ARE 31 CAPLUS RECORDS THAT CITE THIS RECORD (31 CITINGS)

REFERENCE COUNT: 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 29 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1999:84969 HCAPLUS Full-text

DOCUMENT NUMBER: 130:228128

TITLE: Quantitative Characterization of Obliquely Deposited Substrates of Gold by Atomic Force Microscopy: Influence of Substrate Topography on Anchoring of Liquid Crystals

AUTHOR(S): Skaife, Justin J.; Abbott, Nicholas L.

CORPORATE SOURCE: Department of Chemical Engineering, University of Wisconsin, Madison, WI, 53706, USA

SOURCE: Chemistry of Materials (1999), 11(3), 612-623  
CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 10 Feb 1999

AB We report the use of atomic force microscopy (AFM) to characterize quant. the structural anisotropy within ultrathin (thickness of .apprx.10 nm) obliquely deposited films of gold and thereby calculate the influence of this anisotropy on the orientations of liquid crystals (LCs) supported on these surfaces. Whereas visual inspection of AFM images (real space or reciprocal space) reveals no obvious structural anisotropy within these gold films, a quant. anal. of the AFM profiles does show a subtle level of anisotropy on wavelengths comparable to the lateral dimensions of the gold grains (.apprx.30 nm). Our anal. reveals the root-mean-square (rms) slope of the surface topog. to be .apprx.1° greater in a direction parallel to the direction of deposition of the gold as compared to the perpendicular direction. We also demonstrate the rms curvature of the grains of gold to be greatest in a direction parallel to deposition. Because the amplitude of the surface roughness (.apprx.2 nm) is small compared to its wavelength (.apprx.30 nm), the influence of the surface roughness on the orientations of supported LCs can be described

through an elastic mechanism of anchoring. By combining the multimode Berreman-de Gennes model for the elastic free energy  $d$  of a nematic LC with AFM profiles of the topog. of obliquely deposited gold films, we calculate the azimuthal anchoring energy of the supported LC to be .apprx.0.015 mJ/m<sup>2</sup>, a value that is consistent with ests. of anchoring energies obtained by fabrication of twisted nematic LC cells. The results reported in this paper provide a route to the characterization of surfaces with designed levels of anisotropy suitable for control of the anchoring of LCs. This capability will, we believe, find application in studies aimed at exploring the use of LCs for amplification and transduction of events of mol. recognition (e.g., antigen-antibody) at surfaces.

CC 66-3 (Surface Chemistry and Colloids)  
 ST gold film surface structure liq crystal anchoring  
 IT Anisotropy  
 Glass substrates  
 Liquid crystals  
 Surface structure  
 Ultrathin films  
 Vapor deposition process  
 (characterization of obliquely deposited substrates of  
 gold and influence of substrate topog. on anchoring of  
 liquid crystals)  
 IT Free energy  
 (of anchoring; characterization of obliquely deposited  
 substrates of gold and influence of substrate  
 topog. on anchoring of liquid crystals)  
 IT Self-assembled monolayers  
 (of propanethiol; characterization of obliquely deposited  
 substrates of gold and influence of substrate  
 topog. on anchoring of liquid crystals)  
 IT 7440-32-6, Titanium, uses  
 (adhesion layers; characterization of obliquely deposited  
 substrates of gold and influence of substrate  
 topog. on anchoring of liquid crystals)  
 IT 40817-08-1, 5CB  
 (characterization of obliquely deposited substrates of  
 gold and influence of substrate topog. on anchoring of  
 liquid crystals)  
 IT 7440-57-5, Gold, properties  
 (characterization of obliquely deposited substrates of  
 gold and influence of substrate topog. on anchoring of  
 liquid crystals)  
 IT 107-03-9, 1-Propanethiol  
 (self-assembled monolayers;  
 characterization of obliquely deposited substrates of  
 gold and influence of substrate topog. on anchoring of  
 liquid crystals)  
 OS.CITING REF COUNT: 61 THERE ARE 61 CAPLUS RECORDS THAT CITE THIS  
 RECORD (62 CITINGS)  
 REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L86 ANSWER 30 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 1998:342005 HCAPLUS Full-text  
 DOCUMENT NUMBER: 129:100487  
 ORIGINAL REFERENCE NO.: 129:20577a,20580a  
 TITLE: Self-Assembled Silica Gel Networks  
 AUTHOR(S): Wang, Joseph; Pamidi, Prasad V. A.; Zanette,  
 Dilson R.

CORPORATE SOURCE: Department of Chemistry and Biochemistry, New Mexico State University, Las Cruces, NM, 88003, USA

SOURCE: Journal of the American Chemical Society (1998), 120(23), 5852-5853  
CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 08 Jun 1998

AB A simple route is described for the design of three-dimensional silica gel surface networks based on the coupling of self-assembled monolayer and sol-gel processes. A bare gold electrode was immersed in a sol-gel containing a thiolated precursor ((3-mercaptopropyl)trimethoxysilane). When sol-gel encapsulating ferrocene was employed, redox reactions of the electrode surface-anchored silica-gel-encapsulated ferrocene were observed

CC 66-4 (Surface Chemistry and Colloids)

IT 7440-57-5, Gold, processes  
(substrates; preparation of self-assembled silica gel networks)

OS.CITING REF COUNT: 64 THERE ARE 64 CAPLUS RECORDS THAT CITE THIS RECORD (64 CITINGS)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L86 ANSWER 31 OF 66 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1995:899385 HCAPLUS Full-text

DOCUMENT NUMBER: 124:16144

ORIGINAL REFERENCE NO.: 124:3027a,3030a

TITLE: Anchoring of Nematic Liquid Crystals on Self-Assembled Monolayers Formed from Alkanethiols on Semitransparent Films of Gold

AUTHOR(S): Drawhorn, Richard A.; Abbott, Nicholas L.

CORPORATE SOURCE: Department of Chemical Engineering and Materials Science, University of California, Davis, CA, 95616, USA

SOURCE: Journal of Physical Chemistry (1995), 99(45), 16511-15  
CODEN: JPCHAX; ISSN: 0022-3654

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 07 Nov 1995

AB Self-assembled monolayers (SAMs) formed by chemisorption of n-alkanethiols (CH<sub>3</sub>(CH<sub>2</sub>)<sub>n</sub>SH) on films of Au permit manipulation of the mesoscale structure of nematic liquid crystals in contact with these surfaces. Mixed SAMs formed from CH<sub>3</sub>(CH<sub>2</sub>)<sub>15</sub>SH and either CH<sub>3</sub>(CH<sub>2</sub>)<sub>4</sub>SH or CH<sub>3</sub>(CH<sub>2</sub>)<sub>9</sub>SH homeotropically anchor nematic phases of 4-cyano-4'-pentylbiphenyl (5CB) and p-methoxybenzylidene-p-n-butylaniline (MBBA). Single-component SAMs, in contrast, do not anchor uniformly these nematic phases at room temperature; SAMs formed from CH<sub>3</sub>(CH<sub>2</sub>)<sub>n</sub>SH (2 < n < 15) cause either planar or tilted anchoring. Mixed SAMs that homeotropically anchor 5CB and MBBA are conformationally disordered (when characterized prior to contact with the liquid crystal) and have a low number d. of long aliphatic chains. The authors conclude, however, that conformational disorder within the aliphatic chains of SAMs is not a sufficient condition to induce homeotropic anchoring because the aliphatic chains of single-component SAMs with n < 10 are fluidlike (conformationally disordered) at room temperature and do not anchor nematic phases

homeotropically. The authors infer the number d. of long aliphatic chains to be an important factor in the anchoring of liquid crystals on mixed SAMs. Self-assembled monolayers formed from n-alkanethiols, in combination with techniques for their patterning on surfaces, form the basis of a procedure to prepare micrometer-scale optical structures from liquid crystals.

CC 66-4 (Surface Chemistry and Colloids)  
Section cross-reference(s): 36, 73, 75

ST homeotropic anchoring mixed self assembled monolayer; nematic liq crystal mesoscale structure manipulation; alkanethiol mixed self assembled monolayer gold; surface patterning homeotropic anchoring mixed monolayer

IT Chains, chemical  
Chemisorbed substances  
Contact angle  
(nematic liquid crystal mesoscale structure manipulation by homeotropic anchoring on mixed self-assembled monolayers of alkanethiols on gold)

IT Thiols, properties  
(nematic liquid crystal mesoscale structure manipulation by homeotropic anchoring on mixed self-assembled monolayers of alkanethiols on gold)

IT Interfacial energy  
(anchoring, nematic liquid crystal mesoscale structure manipulation by homeotropic anchoring on mixed self-assembled monolayers of alkanethiols on gold)

IT Liquid crystals  
(nematic, nematic liquid crystal mesoscale structure manipulation by homeotropic anchoring on mixed self-assembled monolayers of alkanethiols on gold)

IT 544-76-3, Hexadecane  
(contacting liquid; nematic liquid crystal mesoscale structure manipulation by homeotropic anchoring on mixed self-assembled monolayers of alkanethiols on gold)

IT 110-66-7, 1-Pentanethiol 143-10-2, 1-Decanethiol 2917-26-2, 1-Hexadecanethiol 40817-08-1 97402-82-9, MBBA  
(nematic liquid crystal mesoscale structure manipulation by homeotropic anchoring on mixed self-assembled monolayers of alkanethiols on gold)

IT 7440-57-5, Gold, uses  
(substrate; nematic liquid crystal mesoscale structure manipulation by homeotropic anchoring on mixed self-assembled monolayers of alkanethiols on gold)

OS.CITING REF COUNT: 69 THERE ARE 69 CAPLUS RECORDS THAT CITE THIS RECORD (69 CITINGS)

=> d 32-42 full

L86 ANSWER 32 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN  
AN 2008-H31439 [200846] WPIX Full-text  
CR 2003-247996; 2006-088693; 2006-183628; 2006-392610; 2008-J67384; 2011-A10539  
TI Modifying a substrate surface useful in e.g. biosensor involves contacting a portion of the substrate with alkaline solution comprising surface-modifying agent containing polymer having dihydroxy benzene derivative under oxidative condition  
DC A13; A82; A89; A96; B04; B07; D22; G02; L03; S03; S05; U11

IN LEE H; MESSERSMITH P B  
 PA (NOUN-C) UNIV NORTHWESTERN  
 CYC 121  
 PI WO 2008049108 A1 20080424 (200846)\* EN 109[26]  
 US 20080149566 A1 20080626 (200846) EN  
 EP 2078062 A1 20090715 (200946) EN  
 ADT WO 2008049108 A1 WO 2007-US81941 20071019; US 20080149566 A1 US  
 Provisional US 2006-853013P 20061019; US 20080149566 A1 US  
 2007-875237 20071019; EP 2078062 A1 EP 2007-844447 20071019; EP  
 2078062 A1 PCT Application WO 2007-US81941 20071019  
 FDT EP 2078062 A1 Based on WO 2008049108 A  
 PRAI US 2006-853013P 20061019  
 US 2006-853013P 20061019  
 US 2007-875237 20071019  
 IPCI B05D0001-36 [I,A]; B05D0001-36 [I,C]; B05D0003-10  
 [I,A]; B05D0003-10 [I,C]; C02F0001-62 [I,A]; C02F0001-62 [I,C];  
 C07C0215-00 [I,C]; C07C0215-42 [I,A]; C09D0133-24 [I,A]; C09D0133-24  
 [I,C]; C09D0201-00 [I,A]; C09D0201-00 [I,C]  
 NCL NCLM 210/702.000  
 NCLS 427/002.100; 427/402.000; 564/443.000  
 AB WO 2008049108 A1 UPAB: 20090723

NOVELTY - Modifying (M1) a substrate surface involves contacting at least a portion of the substrate with an alkaline solution under oxidative conditions. The solution comprises a surface-modifying agent containing polymer having dihydroxy benzene derivative.

DETAILED DESCRIPTION - Modifying (M1) a substrate surface involves contacting at least a portion of the substrate with an alkaline solution under oxidative conditions. The solution comprises a surface-modifying agent containing polymer having dihydroxy benzene derivative of formula (I).

R1-R5=thiol, primary amine, secondary amine, nitrile, aldehyde, imidazole, azide, halide, polyhexamethylene dithiocarbonate, hydrogen, hydroxyl, carboxylic acid, aldehyde, carboxylic ester or carboxamide; and

x=0-10;

y=0-10; and

x+y=at least 2 or 3.

Provided that at least one of R1-R5 is not a hydrogen atom; and x or y is at least 1. R1 and R4 form a double bond when eliminated. INDEPENDENT CLAIMS are included for the following:

(1) modifying (M2) the substrate surface to provide a desired functionality involving the method (M1) and contacting the surface-modified substrate with a reactive moiety, where the reactive moiety reacts with and is bound to the modified surface;

(2) reducing amounts of metal in a fluid involving the method (M2); and positioning the surface-modified substrate with a reactive moiety bound to the modified surface in a fluid with metal, where the modified substrate binds to at least a portion of the metal;

(3) forming biofouling-resistant modified substrate involving the method (M1); and contacting at least a portion of the surface-modified substrate with a biofouling-resistant reactive moiety; and

(4) a kit for modifying a substrate surface comprising the surface-modifying agent (I); and instructions for use.

USE - For modifying a substrate surface useful to get a desired functionality, in coating medical devices, in biofouling-resistance, for reducing amounts of metal in a fluid (claimed), for surface modifications of drug delivery carriers and tissue engineering scaffolds, in biosensors, industrial and consumer coatings, photolithography, semiconductors, surface catalysts, next generation electronic displays, electrodeless metallization, self-assembled monolayers, polymeric grafting, and protein labeling.

ADVANTAGE - The surface-modifying agent acts as a powerful building block for thin polymer film deposition on virtually any bulk material surface



where the deposited films are easily adaptable for a remarkable variety of functional uses. The process provides surface-independent, surface-modification method where substrates are modified to display at least one reactive moiety on the substrate surface. The surface-independent nature of the method provides applications in diverse fields such as biocompatible coatings of medical devices, surface modifications of drug delivery carriers and tissue engineering scaffolds, biosensors, industrial and consumer coatings, semiconductors, surface catalysts and next generation electronic displays. The surface-modifying agent forms a polymeric coat on the substrate surface exhibiting desired functionality to the modified surface, reduces the amounts of metal in a fluid, and exhibit biofouling-resistant. The method enhances coatings on artificially or naturally damaged/altered substrates. Linking of His-tagged proteins on surface-modifying agent treated substrates is easy, which is useful for protein immobilization and can be a convenient way to control the orientation of immobilized proteins on surfaces, diagnostic and/or purification purposes.

TECH ORGANIC CHEMISTRY - Preferred Components: The reactive moiety comprises a nucleophile or a metal. The biofouling-resistant reactive moiety is selected from thiols, primary amines, secondary amines, nitriles, aldehydes, imidazoles, azides, halides, polyhexamethylene dithiocarbonate, hydrogen, hydroxyls, carboxylic acids, aldehydes, carboxylic esters or carboxamides.

POLYMERS - Preferred Kit: The kit further comprises a reactive moiety. The kit also comprises a substrate surface to be modified. Preferred Components: The surface-modifying agent is solution (preferably aqueous solution) or is in powdered form.

ABEX DEFINITIONS - Preferred Definitions: - R2=NH2; - R1=H, hydroxy, halide or thiol; - R3 and R5=H; - x and y=1; and - x+y=1-6. - The hydroxyls of the phenyl moiety are positioned at the 3 and 4 positions of the phenyl group relative to the side chain.

SPECIFIC COMPOUNDS - 3,4-Dihydroxy-L-phenylalanine (Ix), 3,4-dihydroxyphenylalanine methyl ester dopamine, norepinephrine and epinephrine are specifically claimed as the surface-modifying agent.

EXAMPLE - No suitable example given.

FS CPI; EPI

MC CPI: A05-E06B; A11-B05; A12-V03; B04-C03; B10-B02E; B10-B02G; B10-B03B; B11-C09A; D09-C01E; G02-A05; L03-J; L04-C06  
EPI: S03-A; S05-A; U11-A09; U11-C05C6; U11-C12; U11-C15A

L86 ANSWER 33 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN

AN 2007-708549 [200766] WPIX Full-text

DNC C2007-248779 [200766]

TI Forming patterned surface useful in bio-device involves forming a self-assembled monolayer on a solid substrate by capillary force lithography to form a surface-modified substrate and contacting it with a biomaterial

DC A89; B04; D16

IN WONG I

PA (REGC-C) UNIV CALIFORNIA; (WONG-I) WONG I

CYC 116

PI WO 2007089464 A2 20070809 (200766)\* EN 25[6]

WO 2007089464 A3 20080717 (200848) EN

ADT WO 2007089464 A2 WO 2007-US1600 20070122

PRAI US 2006-760509P 20060120

IPCI A61L0033-00 [I,A]; A61L0033-00 [I,C]; B05D0001-32 [I,A];

B05D0001-32 [I,C]; B05D0003-10 [I,A]; B05D0003-10 [I,C];

B05D0005-02 [I,A]; B05D0005-02 [I,C]; B05D0005-04 [I,A]; B05D0005-04

[I,C]; B05D0007-00 [I,A]; B05D0007-00 [I,C]; B32B0027-00 [I,A];  
B32B0027-00 [I,C]; B32B0027-38 [I,A]; B32B0027-38 [I,C]; C12M0003-00  
[I,A]; C12M0003-00 [I,C]

EPC C12M0003-04

ICO M12M0540:021; M12M0540:031

AB WO 2007089464 A2 UPAB: 20071015

NOVELTY - A method of patterning the surface of a solid substrate involving forming at least one self-assembled monolayer (SAM) on the solid substrate by capillary force lithography to form a surface-modified substrate; and contacting the surface-modified substrate with at least one biomaterial.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a bio-device having a biomaterial patterned substrate comprising: a substrate; a self-assembled monolayer formed on the substrate; a pattern of biomaterial formed on one of the self-assembled monolayer or exposed portions of the substrate.

USE - For patterning surfaces by producing self assembled monolayers on a surface (claimed) useful in the fabrication of bio-devices.

ADVANTAGE - The method overcomes most of the disadvantages in the prior art methods of conventional patterning methods including photolithography, photochemistry, soft lithography and direct spotting. Compared to photolithography and photochemical methods, the patterning method does not require clean room facilities, and therefore can provide reduced costs. Furthermore, since this method is similar to imprint lithography, much smaller features, down to nanometer size, can be achieved. Compared to the soft lithography process, the patterning method can be used to generate SAM using both aqueous and organic solvent soluble molecules. By bypassing the non-robust silane patterning by directly grafting silane molecules on the surface, this method first forms a homogeneous silane monolayer on the surface followed by patterning a second layer of PEG molecules, specifically selected to be non-adherent for cells and proteins, covalently grafted on to the silane layer. The patterning method is able to reduce nonspecific binding of proteins onto non-patterned area by more than 99%. The method shows a high performance, high throughput, low cost, and simple technique for large area patterning of self-assembled monolayers (SAM) of PEG molecules on Si/SiO<sub>2</sub> substrates for selective protein and cell adhesion using a molding technique. It shows high protein selective patterning technique, which improves the conventional platforms for low density or single mammalian cell and bacteria studies.

TECH BIOLOGY - The bio-material is selected from the group consisting of proteins, peptides, carbohydrates, lipids, nucleic acids and/or cells.  
ORGANIC CHEMISTRY - The first SAM comprises a silane (preferably epoxysilane, dimethoxysilane, trichlorosilane or triethylsilane, especially glycidoxypentyl trimethoxysilane).  
POLYMERS - The second SAM comprises a poly(ethylene glycol) (PEG), such as a PEG derivative having a functional group selected from the group consisting of amines, thiols, carboxyls, trichlorosilanes, maleimides, aldehydes and NHS (preferably methoxy-terminated PEG-amine).

FS CPI

MC CPI: A11-B05; A11-C04B; A12-W11L; B04-B01B; B04-C02; B04-C03; B04-E01; B04-F01; B04-N04; B05-B02C; B11-C01A3; D05-H10

L86 ANSWER 34 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN

AN 2007-254316 [200725] WPIX Full-text

DNC C2007-092434 [200725]

DNN N2007-189145 [200725]

TI Method, useful in e.g. biological applications, comprises disposing an ink mixture comprising two different patterning compounds, on a tip disposed on a cantilever or on a stamp, and contacting the tip or the stamp with a surface

DC B04; D16; J04; P34; P42; S01; S03

IN MIRKIN C A; SALAITA K  
 PA (MIRK-I) MIRKIN C A; (SALA-I) SALAITA K; (NOUN-C) UNIV NORTHWESTERN  
 CYC 113  
 PI WO 2007008507 A2 20070118 (200725)\* EN 42[10]  
 US 20070087172 A1 20070419 (200729) EN  
 ADT WO 2007008507 A2 WO 2006-US26092 20060705; US 20070087172 A1  
 Provisional US 2005-697053P 20050706; US 20070087172 A1  
 US 2006-480557 20060705  
 PRAI US 2005-697053P 20050706  
 US 2006-480557 20060705  
 IPCI A61L0033-00 [I,A]; A61L0033-00 [I,C]; B01D [I,S]; B05D0003-00 [I,A];  
 B05D0003-00 [I,C]; B05D0005-00 [I,A]; B05D0005-00 [I,C]  
 EPC G01Q0080-00; G03F0007-00A  
 ICO B82Y0010-00; L82T0201:01S; L82T0201:01T; Y01N0006:00; Y01N0008:00  
 NCL NCLM 428/195.100  
 NCLS 427/002.100; 427/256.000  
 AB WO 2007008507 A2 UPAB: 20070417  
 NOVELTY - Method comprises: disposing an ink mixture comprising at least two different patterning compounds, including a first patterning compound and a second patterning compound, on a tip disposed on a cantilever or on a stamp; and contacting the tip or the stamp with a surface, where the transport of the first and second patterning compounds occurs from the tip or the stamp to the surface to produce on the surface a phase separated structure comprising the first and second patterning compounds.  
 DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:  
 (1) an article comprising a solid surface, a phase separated structure on the substrate comprising a first patterning compound and a second patterning compound, where the first and second patterning compounds are chemisorbed to the solid surface, and the first or second patterning compound have a lateral dimension which is about 15 nm or less; and  
 (2) an ordered array comprising a series of ordered dots or lines, where the dots comprises a hydrophilic dot interior and a hydrophobic dot exterior.  
 USE - The ink mixture is useful in biological (e.g. protein microarrays, nucleic acid and nanoarrays) and diagnostic assays, sensors, semiconductor, electronic, and magnetic applications.  
 ADVANTAGE - The method can potentially increase the ultimate resolution of a variety of techniques, and can simultaneously generate multicomponent structures.  
 TECH IMAGING AND COMMUNICATION - Preferred Method: The method further comprises: modifying the surface surrounding the phase separated structure; modifying the phase separated structure; and modifying the phase separated structure, where the modification selectively modifies only one of the first and second patterning compounds.  
 Preferred Composition: The ink mixture comprises only two patterning compounds or consists essentially of two patterning compounds and a solvent system. The ink is disposed on a tip or on a stamp.  
 Preferred Components: The first and second patterning compounds are adapted: to covalently bond to or chemisorb to the surface; to form self assembled monolayers; and to provide a hydrophobic surface and the second patterning compound is adapted to provide a hydrophilic surface. The first patterning compound and the second patterning compound are of formula X-Y1-T, where X is a functional group adapted for binding to the surface, Y1 is a spacer moiety and T is a terminal group.  
 INSTRUMENTATION AND TESTING - Preferred Components: The tip is a scanning probe microscope tip, an atomic force microscope tip or the tip comprising a channel for delivery of the ink mixture. The

phase-separated structure comprises the first patterning compound surrounding the second patterning compound. The phase-separated structure has a lateral dimension, which is about one micron or less. The first patterning compound provides a hydrophobic surface and the second patterning compound provides a hydrophilic surface. The structure comprises a dot, line and a self-assembled monolayer.

FS CPI; GMPI; EPI

MC CPI: B11-C08B; B11-C08E6; B12-K04; D05-H10; J04-B03; J04-B04  
EPI: S01-J03; S03-E14H; S03-H01A

L86 ANSWER 35 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS ON STN

AN 2007-546983 [200754] WPIX Full-text

DNC C2007-201203 [200754]

DNN N2007-421377 [200754]

TI Coating electrical contact, useful for protection against environmental influences e.g. corrosion, during electrical conductivity, comprises applying an electrically conductive layer with a chemically functional surface on the contact

DC A85; G02; P42; V03

IN AKARI S; ROTH R M

PA (FIXT-N) FIXTEST GMBH

CYC 116

PI DE 102006030961 A1 20070510 (200754)\* DE 7[2]

WO 2007054244 A2 20070518 (200754) DE

ADT DE 102006030961 A1 DE 2006-102006030961 20060703; WO

2007054244 A2 WO 2006-EP10596 20061106

PRAI DE 2005-102005053790 20051109

DE 2006-102006030961 20060703

IPCI B05D0001-08 [I,A]; B05D0001-08 [I,C];

B05D0001-18 [I,A]; B05D0001-18 [I,C]; B05D0007-24

[I,A]; B05D0007-24 [I,C]; C09D0005-24 [I,A]; C09D0005-24 [I,C];

H01H0001-00 [I,C]; H01H0001-58 [I,A]; H01R0013-03 [I,A]; H01R0013-03

[I,C]

ICO L05D0001:08; L05D0005:12; Y01N0006:00

AB DE 102006030961 A1 UPAB: 20070822

NOVELTY - Coating electrical contact (1) for protection against environmental influences such as corrosion, wear or deposition of dirt, during electrical conductivity comprises applying an electrically conductive layer with a chemically functional surface on the contact.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for an electrical contact with a contact area on which a self-assembled monolayer (4) is applied.

USE - The process is useful for protecting the electrical contacts against environmental influences such as corrosion, wear or deposition of dirt, during electrical conductivity. The self-assembling molecules in the contact are useful for the preparation of the monolayer on an electrical contact. The functionalized and conductive nano-particles, and conductive functional polymers in the contact are useful for the preparation of a layer on the contact (all claimed).

ADVANTAGE - The process improves the reliability of the electrical contact. The electrical contact obtained by the process exhibits corrosion resistance and durability.

DESCRIPTION OF DRAWINGS - The drawing shows the schematic view of the coated contact area:

Electrical contact; (1)

Metallic surface; (2)

Self-assembled mono layers; (3, 4)

Thiolic anchor group; (5)

Termination group. (8)

TECH INORGANIC CHEMISTRY - Preferred Components: The layer is multi-layer or a self-assembled monolayer (3). A connecting group of the monolayer, which binds with a metallic surface (2) of the contact, is a thiolic anchor group (5), which forms a covalent bonding with the surface. The monolayer has a termination group (8) such as methyl or fluoromethyl. The contacts are occupied by the monolayer in an ethanolic or aqueous self-assembled monolayer solution. The inner and/or outer portion of the contact is applied with a layer from functionalized and conductive nano particles. The contact area is coated with functional and conductive polymers. The coating takes place by a plasma jet procedure or plasma polymerization at atmospheric pressure.

FS CPI; GMP; EPI

MC CPI: A12-E01; G02-A05B

EPI: V03-A01; V03-A08

L86 ANSWER 36 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN

AN 2006-125551 [200613] WPIX Full-text

DNC C2006-043919 [200613]

DNN N2006-108659 [200613]

TI Article-of-manufacture comprises object (e.g. stent) having modified conductive surface (with functional moiety capable of interacting with substance that is electrochemically attached to surface) and active substance

DC A96; B05; B07; D16; D22; P34

IN DANZIGER I; DOMB A J; MANDLER D; OKNER R; OROM M; SHUSTAK G; SWED A; TAL N; DOMB A; OROM M

PA (ELUT-N) ELUTEX LTD

CYC 110

PI WO 2006008739 A2 20060126 (200613)\* EN 120[23]

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EP 1768717 A2 20070404 (200726) EN

AU 2005264159 A1 20060126 (200735) EN

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JP 2008506493 T 20080306 (200819) JA 94

US 20090232867 A1 20090917 (200961) EN

ADT WO 2006008739 A2 WO 2005-IL769 20050719; AU 2005264159 A1

AU 2005-264159 20050719; EP 1768717 A2 EP 2005-761352

20050719; EP 1768717 A2 WO 2005-IL769 20050719; JP

2008506493 T WO 2005-IL769 20050719; JP 2008506493 T JP

2007-522120 20050719; US 20090232867 A1 Provisional US

2004-588749P 20040719; US 20090232867 A1 PCT Application WO

2005-IL769 20050719; US 20090232867 A1 US 2007-632697 20070118

FDT EP 1768717 A2 Based on WO 2006008739 A; AU 2005264159 A1 Based on WO 2006008739 A; JP 2008506493 T Based on WO 2006008739 A

PRAI US 2004-588749P 20040719

US 2007-632697 20070118

IPCI A61F0002-00 [I,A]; A61F0002-00 [I,C]; A61K0047-02 [I,A]; A61K0047-02 [I,C]; A61K0047-12 [I,A]; A61K0047-12 [I,C]; A61K0047-30 [I,A]; A61K0047-30 [I,C]; A61K0009-00 [I,A]; A61K0009-00 [I,C]; A61K0009-50 [I,A]; A61K0009-50 [I,C]; A61L0027-00 [I,A]; A61L0027-00 [I,C]; A61L0027-00 [I,C]; A61L0027-34 [I,A]; A61L0027-34 [I,C]; A61L0031-00 [I,A]; A61L0031-00 [I,C]; A61L0031-08 [I,C]; A61L0031-08 [I,A]; A61L0031-10 [I,A]; A61L0031-10 [I,C]; A61L0031-14 [I,C]; A61L0031-14 [I,A]; A61L0031-16 [I,A]; A61L0033-00 [I,A]; A61L0033-00 [I,C]; B05C0003-02 [I,A]; B05C0003-02 [I,C]; B05D0007-24 [I,A]; B05D0007-24 [I,C]

EPC A61L0027-34; A61L0027-54; A61L0031-10; A61L0031-16; C09D0005-44F

ICO L82T0201:01T; Y01N0006:00

NCL NCLM 424/423.000  
 NCLS 118/423.000; 427/002.240  
 FCL A61K0047-02; A61K0047-12; A61K0047-30; A61K0009-00; A61K0009-50;  
 A61L0027-00 E; A61L0027-00 U; A61L0031-00 Z; A61L0033-00  
 Main: A61L0027-00 E  
 Secondary: A61K0047-02; A61K0047-12; A61K0047-30; A61K0009-00;  
 A61K0009-50; A61L0027-00 U; A61L0031-00 Z; A61L0033-00  
 FTRM 4C076; 4C081; 4C076/AA67; 4C076/AA94; 4C076/AA99; 4C081/AB01;  
 4C081/AB11; 4C081/AB31; 4C081/AB33; 4C081/AB34; 4C081/AB36;  
 4C081/AC06; 4C081/BA01; 4C081/BA05; 4C081/BA11; 4C081/BA12;  
 4C081/BA14; 4C081/BB06; 4C076/BB32; 4C081/CA15.2; 4C081/CA28.2;  
 4C081/CA29.2; 4C081/CC07; 4C076/CC41; 4C081/CD06.2; 4C081/CD08.2;  
 4C081/CD11.2; 4C081/CD17.2; 4C081/CD18; 4C081/CD26; 4C081/CD27;  
 4C081/CE01; 4C081/CE02; 4C081/CE03; 4C081/CE04; 4C081/CE05;  
 4C081/CE11; 4C081/CG02; 4C081/CG05; 4C081/CG06; 4C081/CG07;  
 4C081/DA01; 4C081/DB07; 4C081/DC03; 4C081/DC04; 4C081/DC05;  
 4C081/DC06; 4C081/DC14; 4C076/DD21.A; 4C076/DD41.K; 4C076/DD41.M;  
 4C076/DD64.L; 4C076/DD65.L; 4C081/EA02; 4C081/EA05; 4C081/EA06;  
 4C081/EA14; 4C076/EE01.K; 4C076/EE01.M; 4C076/FF22; 4C076/FF27;  
 4C076/FF28; 4C076/FF29; 4C076/FF31; 4C076/FF63; 4C076/GG16  
 AB WO 2006008739 A2 UPAB: 20060224

NOVELTY - Article-of-manufacture (I) comprises an object (A) having a conductive surface (B) and at least one active substance (C) being attached to at least a portion of (B), where (B) is a modified conductive surface having at least one functional moiety capable of interacting with (C) and/or (C) electrochemically attached to (B).

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

- (1) a process of preparing (A) having (B) and (C) being attached to at least a portion of (B) which comprises:
  - (a) providing (A) having (B);
  - (b) modifying (B) to provide (A) having (B) having at least one functional moiety attached, the functional moiety being capable of interacting with (C); and
  - (c) contacting (C) and (B) having at least one functional moiety attached; or
  - (a) providing (A) having (B); and
  - (b) electrochemically attaching (C) (having an electro attachable group) to (B);
- (2) a method of treating a subject having a medical condition in which implanting a medical device is beneficial, which comprises:
  - (a) providing a medical device having (B) and (C) being attached at least to a portion of (B), where (B) is a modified conductive surface having at least one functional moiety capable of interacting with (C) and/or (C) is electrochemically attached to (B); and
  - (b) implanting the medical device within the subject, for treating the medical condition; and
- (3) a system for coating at least one medical device having (B), which comprises in operative arrangement, at least one holding device for holding the medical device, a conveyor, and a first and second bath arranged along the conveyor, where the conveyor is designed and constructed to convey the at least one holding device such that the holding device is placed within each of the first and second baths for a predetermined time period and in a predetermined order, and where the first bath is a modification bath and the second bath is an active substance solution bath.

USE - (A) Is useful for treating a subject having a medical condition (a cardiovascular disease, atherosclerosis, thrombosis, stenosis, restenosis, a cardiologic disease, a peripheral vascular disease, an orthopedic condition, a proliferative disease, an infectious disease, a transplantation-related disease, a degenerative disease, a cerebrovascular disease, a gastrointestinal

disease, a hepatic disease, a neurological disease, an autoimmune disease and an implant-related disease) (claimed).

ADVANTAGE - The modified conductive surface enhances the biocompatibility (A). The formation of self-assembled monolayers on stainless steel surface increase surface adhesion of organic biocompatible substances.

TECH ORGANIC CHEMISTRY - Preferred Components: (B) Comprises at least one metal or its alloy, where the metal is iron, stainless steel (preferred), titanium, nickel, tantalum, platinum, gold, silver, copper. (C) Is a bioactive agent, polymer, polymer having a bioactive agent attached, plurality of microparticles and/or nanoparticles and/or plurality of microparticles and/or nanoparticles having a bioactive agent attached. The functional moiety is an amine, ammonium ion, carboxylate, thiocarboxylate, amide, carbamyl, hydroxyl, thiohydroxyl, alkoxide, thioalkoxide, nitrate, cyanate, pyrrole, isocyanate, halide, azide, unsaturated moiety, hydrophobic moiety (preferred), phosphate, phosphonate, sulfate, sulfonate and/or sulfonamide. The electro attachable group is a carboxylate, sulfonate, sulfate, phosphonate or a phosphate. The organic substance further comprises an organic residue having 3-30 carbon atoms. The organic substance is a fatty acid (decanoic acid, myristic acid, palmitic acid or stearic acid) or a fatty acid derivatized by the functional group. The organosilane has the formula of  $XmSiR(4-m)$ .

$m = 1-3$ ;

X = halide or (thio)alkoxy; and

R = optionally substituted hydrocarbon residue (preferably 1-10C hydrocarbon residue).

(C) Is an electropolymerized polymer comprising a bioactive agent attached, where the electropolymerized polymer is polypyrrole, polythiophene, poly-p-phenylene, poly-p-phenylene sulfide, polyaniline, poly(2,5-thienylene), fluoroaluminum, fluorogallium, phthalocyanine and/or their derivatives. The electropolymerized polymer comprises a bioactive agent being absorbed, swelled or embedded. The organic substance comprises an electro attachable group and the self-assembled monolayer is

electrochemically/non-electrochemically formed onto (B). The organic substance further comprises at least one functional group capable of interacting with (C). The fatty acid is derivatized by at least one functional group capable of interacting with (C). The hydrocarbon residue is substituted by at least one functional moiety capable of interacting with (C). The electropolymerized polymer comprises an attached co-polymer. The co-polymer comprises a bioactive agent which is attached or encapsulated.

Preferred Process: The modifying is effected: by attaching (C) to (B), where (C) comprises a functional moiety capable of interacting with (C); or by electrochemically attaching organic substance to (B), where the organic substance comprises an electro attachable group and a functional moiety capable of interacting with (C); or if the organic substance is organosilane and the modifying is effected by non-electrochemically attaching the organosilane to (B). The contacting is effected: either by reacting (B) having attached functional moiety and the active substance; or by swelling (C) within (B) having at least one attached functional moiety; by polymerizing a monomer corresponding to the polymer onto (B) having at least one attached functional moiety (when (C) is a polymer); or by polymerizing an electropolymerizable monomer corresponding to the polymer onto (B) having at least one attached functional moiety (where the polymer is an electropolymerizable polymer); or by absorbing (C) to (B) having at least one attached functional moiety. The preparation of (A) further comprises, prior to the electrochemically attaching, modifying the conductive surface, to provide an object having a

conductive surface having at least one functional moiety capable of interacting with (C).

PHARMACEUTICALS - Preferred Components:

(A) Is a medical device or an implantable device (a pacemaker, graft, stent (preferred), wire, orthopedic implant, implantable diffusion pump, injection port or a heart valve). The bioactive agent is a therapeutically active agent (an anti-thrombogenic agent, anti-platelet agent, anti-coagulant, growth factor, statin, toxin, antimicrobial agent, analgesic, anti-metabolic agent, vasoactive agent, vasodilator agent, prostaglandin, hormone, thrombin inhibitor, enzyme, oligonucleotide, nucleic acid, antisense, protein, antibody, antigen, vitamin, immunoglobulin, cytokine, cardiovascular agent, endothelial cells, antiinflammatory agent, antibiotic, chemotherapeutic agent, antioxidant, phospholipid, anti-proliferative agent, corticosteroid, heparin, heparinoid, albumin, gamma globulin, paclitaxel and/or hyaluronic acid) and a labeling agent.

(B) Is an electrochemically/non-electrochemically modified conductive surface having at least one functional moiety capable of interacting with (C), where the interacting is effected by a covalent bond, biodegradable bond, ionic bond, hydrogen bond, Van der Waals interactions, hydrophobic interactions, swelling or absorption. (B) Is modified by attaching to at least one organic substance, where the organic substance forms a self-assembled monolayer onto (B). (B) Is electrochemically modified by electrochemically attaching to the organic substance, where the organic substance comprises an electroattachable group and a functional moiety capable of interacting with the active substance. (B) Is non-electrochemically modified by depositing on at least one organic substance, where the organic substance comprises an organosilane having a functional moiety capable of interacting with the active substance. (C) Is electrochemically attached to (B). The bioactive agent, polymer and microparticles and/or nanoparticles comprise at least one electroattachable group. The organic substance forms a self-assembled monolayer onto (B). The implanting device having (C) attached to (B) is beneficial. The modification bath comprises an organic substance having a functional moiety capable of interacting with (C). (C) Is an electropolymerized polymer and the second bath is an electropolymerization bath. The medical device comprises at least one stent assembly. The system further comprises: at least one additional bath arranged along the conveyor, where the conveyor is designed and constructed to place the holding device within the additional treating bath for a predetermined time period; a cartridge having a cartridge body adapted for enabling the holding device to be mounted onto the cartridge body; and an arm carrying at least one electrode structure and operable to engage the electrode structure with a second side of the perforated encapsulation. The additional treating bath is a pretreatment bath, washing bath, rinsing bath, electropolymerization bath, chemical polymerization bath or a second active substance solution bath. In the system, the holding device comprises a perforated encapsulation, adapted to receive the medical device, and at least two cups adapted for enabling electrode structures to engage with the perforated encapsulation hence to generate an electric field within the perforated encapsulation. The perforated encapsulation is designed and constructed to allow fluids and chemicals to flow through there. The electropolymerization bath comprises at least one electrode structure, mounted on a base of the electropolymerization bath and connected to an external power source. The conveyor is operable to mount the holding device on the electrode



structure, to engage the electrode structure with a first side of the perforated encapsulation.

FS CPI; GMPI

MC CPI: A12-V02; B02-Z; B03-L; B04-B01B; B04-C03; B04-G01; B04-N04;  
B05-A03A; B05-A03B; B05-B02A3; B05-B02C; B05-C01; B05-C02;  
B05-C04; B05-C05; B06-D05; B06-F02; B07-D02; B07-F03; B10-A05;  
B10-A08; B10-A14; B10-A16; B10-A22; B10-C04E; B11-C03;  
B11-C04A1; B11-C04F; B14-A01; B14-C01; B14-C03; B14-E10;  
B14-F01; B14-F01G; B14-F02D; B14-F04; B14-F07; B14-G02C;  
B14-G02D; B14-H01B; B14-L06; B14-N01; B14-N12; B14-N16; D05-A02;  
D09-A01C; D09-C01

L86 ANSWER 37 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS on STN

AN 2006-470600 [200648] WPIX Full-text

CR 2008-G49833

TI Vertical cavity surface emitting laser assembly for use in  
emitting laser light, comprises vertical cavity surface  
emitting laser structure, surface modifier  
coating, and microlens

DC A88; Q63; U11; U12; V08

IN CHABINYC M L; CHUA C L; MAEDA P Y

PA (PRCA-C) PALO ALTO RES CENT INC

CYC 1

PI US 20060131124 A1 20060622 (200648)\* EN 12[9]

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US 7327774 B2 20080205 (200812) EN

ADT US 20060131124 A1 US 2004-15937 20041217

PRAI US 2004-15937 20041217

IPCI F16D0043-00 [I,C]; F16D0043-18 [I,A]; H01S0003-08 [I,A]; H01S0003-08 [I,C]

EPC H01S0005-026; H01S0005-42B

ICO B82Y0030-00; L82T0201:01T; T01S0005:042E; T01S0005:183

NCL NCLM 192/105.0CD

AB US 20060131124 A1 UPAB: 20060727

NOVELTY - A Vertical Cavity Surface Emitting Laser (VCSEL) assembly comprises VCSEL structure including a surface and a light emitting region located on the surface; surface modifier coating formed on the surface, the surface modifier coating including a relatively wettable region located over the light emitting region; and microlens formed on the relatively wettable region of the surface modifier coating.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(A) a method for forming microlenses on a light emitting structure, the light emitting structure including having a light emitting region located on a surface of the light emitting structure, comprising: processing the surface to form a surface modifier coating including relatively wettable region located over the light emitting region; and depositing a lens-forming material over the surface such that the lens-forming material forms a domed liquid bead over the relatively wettable region;

(B) a method for producing a Vertical Cavity Surface Emitting Laser (VCSEL) assembly, comprising forming a VCSEL structure including having a light emitting region located on a surface of the VCSEL structure; and performing the method for forming microlenses on a light emitting structure; and

(C) an array including assemblies, where each assembly comprising light emitting/receiving structure including a surface and a light emitting/receiving region located on the surface; surface modifier coating formed on the surface, the surface modifier coating including a relatively wettable region located over the light emitting/receiving region; and microlens formed on the relatively wettable region of the surface modifier coating.

USE - For use in emitting laser light vertically from the substrate surface.

ADVANTAGE - The invention provides self-assembly and self-alignment of microlenses, which avoids the cost and assembly difficulties associated with the integrated of the VCSEL array and a microlens array.

DESCRIPTION OF DRAWINGS - The drawing shows a flow diagram showing a simplified method for producing VCSEL assemblies in the invention.

TECH IMAGING AND COMMUNICATION - Preferred Components: The surface modifier coating comprises a relatively non-wettable region surrounding the relatively wettable region such that the relatively wettable region and the relatively non-wettable region define a peripheral boundary. The microlens includes an outer edge aligned with the peripheral boundary. The surface modifier coating further comprises a self-assembling monolayer (SAM) consisting of organothiol(s); and relatively non-wettable region formed on the electrode such that the relatively non-wettable region surrounds the relatively wettable region. The VCSEL structure further comprises an electrode formed on the surface, the electrode defining a central aperture surrounding the light emitting region, and where the relatively wettable region of the surface modifier coating is entirely located inside the central aperture defined by the electrode. The light emitting/receiving structures are arranged in a one-dimensional row or two-dimensional array. The light emitting/receiving structure comprises one of a Vertical Cavity Surface Emitting Laser (VCSEL), a light emitting diode (LED), and a light sensor. Preferred Process: The step of processing the surface comprises forming a relatively non-wettable region surrounding the relatively wettable region such that an interface between the relatively non-wettable region and the relatively wettable region form a peripheral boundary. The step of forming the microlens comprises printing, microjetting, and/or dip coating the lens-forming material onto the relatively wettable region, and curing the domed liquid bead. It may comprise printing the lens-forming material in a solid form, and melting the lens-forming material to form the domed liquid bead. It includes depositing one of an optical epoxy and an optical polymer onto the relatively wettable region. The step of forming the VCSEL structure comprises forming an electrode on the surface such that the electrode defines an aperture surrounding the light emitting region, and where processing the surface comprises forming the relatively wettable region inside the central aperture defined by the electrode.

INORGANIC CHEMISTRY - Preferred Materials: The surface of the VCSEL structure comprises gallium arsenide. The electrode comprises gold.

ORGANIC CHEMISTRY - Preferred Materials: The relatively wettable region comprises organothiol with a chemically polar headgroup. The relatively non-wettable region comprises alkanethiol.

POLYMERS - Preferred Material: The microlens comprises optical pre-polymer or optical polymer.

FS CPI; GMPI; EPI

MC CPI: A11-B05; A11-C02C; A12-L02A  
EPI: U11-C18D; U12-A01B2; V08-A04A

L86 ANSWER 38 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS ON STN

AN 2006-342209 [200635] WPIX Full-text

DNC C2006-112338 [200635]

DNN N2006-290068 [200635]

TI Forming nanoparticle based monolayer film used in fabrication of high performance semiconductor devices, e.g. single

electron transistors, involves applying nanoparticles containing solution to modifying layer surface and curing structure

DC L03; P73; U11; U12; U14

IN SUBRAMANYA K M; YEO I; KOLAKEMAYYA S; YEO I S

PA (SMSU-C) SAMSUNG ELECTRONICS CO LTD

CYC 2

PI US 20060099430 A1 20060511 (200635)\* EN 11[7]

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KR 2006041537 A 20060512 (200672) KO

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KR 640595 B1 20061101 (200758) KO

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US 7344773 B2 20080318 (200822) EN

ADT US 20060099430 A1 US 2005-190214 20050726; KR 2006041537 A

KR 2004-90780 20041109; KR 640595 B1 KR 2004-90780 20041109

FDT KR 640595 B1 Previous Publ KR 2006041537 A

PRAI KR 2004-90780 20041109

IPCI B32B0033-00 [I,A]; B32B0033-00 [I,C]; B32B0007-04 [I,A]; B32B0007-04 [I,C]; B32B0009-04 [I,A]

EPC B05D0001-18C; G11B0005-712; G11B0005-82

ICO B82Y0010-00; B82Y0030-00; L05D0007:00N2; L82T0201:01

NCL NCLM 428/447.000

AB US 20060099430 A1 UPAB: 20060602

NOVELTY - Forming a nanoparticle based monolayer film comprises forming a surface modifying layer on a substrate using a material comprising first and second functional groups; applying to the surface modifying layer a solution comprising nanoparticles; and curing the resultant structure formed at second step for a time to form a nanoparticle based monolayer film.

DETAILED DESCRIPTION - Forming a nanoparticle based monolayer film comprises:

- (a) forming a surface modifying layer on a substrate using a material comprising first and second functional groups;
- (b) applying to the surface modifying layer a solution comprising nanoparticles; and
- (c) curing the resultant structure formed at second step for a time to form a nanoparticle based monolayer film.

The first functional group chemically binds to the substrate. The second functional group comprises a group capable of forming van der Waals forces.

USE - For forming nanoparticle based monolayer films used in fabrication of high performance semiconductor devices e.g. single electron transistors for flash device, floating gate field effect transistors and large capacity magnetic recording media.

ADVANTAGE - The process provides film with high particle density on the surface of the substrate in a cost effective manner.

TECH INORGANIC CHEMISTRY - Preferred Components: The substrate comprises a metal material, an insulating material, a high dielectric material, a polysilicon material and/or a metal silicide material. The substrate comprises gold (Au), silver (Ag), silicon (Si), silicon oxide (SiO<sub>2</sub>), glass and/or indium tin oxide (ITO). The group forming van der Waals forces comprises methane. The nanoparticles comprise gold (Au), silver (Ag), iron (Fe), nickel (Ni), palladium (Pd), platinum (Pt), cobalt (Co) and/or their alloys. The nanoparticles can also comprise cadmium silicide, cadmium selenide and/or lead selenide. The solution comprises a solvent or a surfactant. The solvent comprises n-hexane, chloroform, toluene, deionized water or ethanol. The solution includes a surfactant that forms a capping film around the nanoparticles. The capping film forms

a van der Waals bond with the surface modifying layer. The self-assembled monolayer comprises an alkyl siloxane, an alkylsilane, and/or an alkyl thiol. Preferred Methods: The applying to the surface modifying layer a solution comprising nanoparticles comprises depositing a self-assembled monolayer. The curing step is performed at an atmospheric pressure for 3-250 minutes. Preferred Properties: The nanoparticles comprise a particle size of less than or equal to 100, preferably 10-30 nm. The nanoparticles comprise an average particle size distribution of within 15%.

FS CPI; GMP; EPI

MC CPI; L04-E01A

EPI: U11-C01J6; U11-C12; U12-B03A; U12-B03F2; U12-D02A1; U12-D02D; U12-E01B2; U12-Q; U14-A03B7

L86 ANSWER 39 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS ON STN

AN 2004-023263 [200402] WPIX Full-text

DNC C2004-007311 [200402]

DNN N2004-018013 [200402]

TI Forming inorganic structure, for use as e.g. electronic photonic and nano composite materials, comprises providing substrate with repeat protein polymer, and exposing substrate to precursor containing inorganic species

DC J04; P42

IN KUMAR M

PA (DOWO-C) DOW CORNING CORP; (GEMV-C) GENENCOR INT INC; (KUMA-I) KUMAR M; (DASC-C) DANISCO US INC

CYC 101

PI WO 2003099465 A1 20031204 (200402)\* EN 27[0]

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US 20040014186 A1 20040122 (200407) EN

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AU 2003233579 A1 20031212 (200443) EN

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EP 1509336 A1 20050302 (200517) EN

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AU 2003233579 A8 20031212 (200559) EN

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US 7381789 B2 20080603 (200839) EN

EP 1509336 B1 20110119 (201106) EN

DE 60335798 E 20110303 (201118) DE

ADT WO 2003099465 A1 WO 2003-US15757 20030520; US 20040014186 A1

Provisional US 2002-381913P 20020520; US 7381789 B2

Provisional US 2002-381913P 20020520; AU 2003233579 A1

AU 2003-233579 20030520; AU 2003233579 A8 AU 2003-233579

20030520; EP 1509336 A1 EP 2003-729016 20030520; EP

1509336 B1 EP 2003-729016 20030520; US 20040014186 A1

US 2003-441965 20030520; US 7381789 B2 US 2003-441965

20030520; EP 1509336 A1 WO 2003-US15757 20030520; EP

1509336 B1 PCT Application WO 2003-US15757 20030520; DE

60335798 E DE 2003-60335798 20030520; DE 60335798 E EP

2003-729016 20030520; DE 60335798 E PCT Application WO

2003-US15757 20030520

FDT AU 2003233579 A1 Based on WO 2003099465 A; EP 1509336 A1 Based on WO

2003099465 A; AU 2003233579 A8 Based on WO 2003099465 A; EP 1509336 B1

Based on WO 2003099465 A; DE 60335798 E Based on EP 1509336 A; DE

60335798 E Based on WO 2003099465 A

PRAI US 2002-381913P 20020520

US 2003-441965 20030520

IPCI B05D0001-36 [I,A]; B05D0001-36 [I,A]; B05D0007-00  
 [I,A]; B05D0007-00 [I,A]; C07K0017-00 [I,A]; C07K0017-00 [I,C]  
 IPCR B05D0001-36 [I,A]; B05D0001-36 [I,C]; B05D0007-00  
 [I,A]; B05D0007-00 [I,C]; C07K0014-00 [I,A]; C07K0014-00 [I,C];  
 C07K0017-00 [I,C]; C07K0017-14 [I,A]; C08J0007-00 [I,C]; C08J0007-06  
 [I,A]; C09D0001-00 [I,A]; C09D0001-00 [I,C]; C09D0189-00 [I,A];  
 C09D0189-00 [I,C]; C12P0003-00 [I,A]; C12P0003-00 [I,C]  
 EPC C07K0014-00B1; C07K0017-14  
 ICO B82Y0005-00  
 NCL NCLM 435/168.000; 530/300.000  
 NCLS 530/400.000; 530/420.000; 977/715.000  
 AB WO 2003099465 A1 UPAB: 20110124

NOVELTY - Forming an inorganic structure comprises providing substrate with a repeat protein polymer, and exposing the substrate to a precursor comprising inorganic species. The repeat protein polymer catalyzes the formation of an inorganic structure on the substrate.

DETAILED DESCRIPTION - Forming inorganic structure comprises providing substrate with repeat protein polymer, and exposing the substrate to a precursor comprising inorganic species. The repeat protein polymer catalyzes the formation of an inorganic structure on the substrate. The repeat protein polymer has formula  $Ty((Anx(B)b(A'n')x'(B')b'(A'n'')x''))iT'y'$ .

A, A' and A'' = individual unit of repeat amino acid sequence;

B, B' and b' = any amino acid sequence of 4-50 amino acids;

n, n' and n'' = at least 2 - 250;

i = 1-100;

T, T', y and y' = 1-100 amino acid sequence containing fewer than 20% of the amino acids in the repeat protein copolymer; and

x = 0 - at least 1 and varies with the number of different amino acids in A to provide for at least 30 amino acids in each A repeat sequence.

USE - Used for forming inorganic structure useful for, e.g. electronic photonic and nano composite materials.

ADVANTAGE - The process is highly controlled from the nanometer scale to the macroscopic scale.

TECH BIOLOGY - Preferred Components: The substrate has repeat protein polymers on it. Each repeat protein polymer are the same or different from another at least one of the repeat protein polymer. The repeat protein polymer has a SEQ ID NO. 20-25. The inorganic species comprises species containing silicon, zirconium, silver (preferred), copper, cadmium, tantalum, yttrium, iron, titanium, cobalt, and/or calcium. The inorganic species is preferably tetraethyl orthosilicate (TEOS), 3-aminopropyltriethoxy silane, and/or phenyl tri ethoxy silane. The inorganic species is yttrium ethoxide, silver nitrate, and/or calcium chloride. The substrate has a surface . The repeat protein polymer is on a portion of the surface of the substrate. The inorganic structure forms on the surface of the substrate in areas with repeat protein polymer. The repeat protein polymer forms a pattern on the surface. The inorganic structure forms on the substrate in areas with the repeat protein polymer. The inorganic structure has features with a size of 1-999 nm. The repeat polymer comprises self-assembled monolayer on the substrate. The inorganic structure comprises meso porous fibrous silica particles. The repeat protein polymer has an overall cationic charge. The repeat protein polymer has lysine(s). Preferred Methods: The method also comprises placing the repeat protein polymer on the substrate with soft lithographic stamp, and placing the repeat protein polymer on the substrate by rapid printing. The method also comprises providing second repeat protein polymer in contact with the first organic structure. The first and second inorganic

structures comprise single inorganic structure containing 3-dimensional structure.

ABEX DEFINITIONS - Preferred Definitions: - A, A' and A'' = 3-30, preferably SEQ ID NO. 1, 3-11; - i = 1-50, preferably 1-30; and - T = 1-60 amino acid sequence.

FS CPI; GMPI  
MC CPI; J04-E

L86 ANSWER 40 OF 66 WPIX COPYRIGHT 2011 THOMSON REUTERS ON STN

AN 2003-598102 [200356] WPIX Full-text

DNC C2003-162179 [200356]

DNN N2003-476623 [200356]

TI Membrane useful for manufacturing electrodes and/or biosensors, is adapted to be supported on a patterned substrate which comprises bilayer regions of size less than 20 micrometer in at least one dimension

DC A89; B04; D16; P42; S03

IN BUSHBY J R; COLYER J; EVANS S J

PA (UYLE-N) UNIV LEEDS

CYC 99

PI WO 2003051506 A1 20030626 (200356)\* EN 31[4]

<--

AU 2002358214 A1 20030630 (200420) EN

<--

ADT WO 2003051506 A1 WO 2002-GB5795 20021219; AU 2002358214 A1

AU 2002-358214 20021219

FDT AU 2002358214 A1 Based on WO 2003051506 A

PRAI GB 2001-30318 20011219

IPCR C12Q0001-00 [I,A]; C12Q0001-00 [I,C]; G01N0027-40 [N,A]; G01N0027-40 [N,C]; G01N0033-543 [I,A]; G01N0033-543 [I,C]

EPC C12Q0001-00B; G01N0033-543K2B

ICO L01J0219:00C; S01N0027:40

AB WO 2003051506 A1 UPAB: 20050531

NOVELTY - A membrane (I) adapted to be supported on a patterned substrate, where the pattern comprises bilayer regions whose size is less than 20 microns in at least one dimension. Optionally, in (I) the membrane supporting regions of the substrate are provided with a proportion of ligands.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) an electrode (II) which comprises (I);

(2) a device (III) which comprises (II);

(3) manufacturing (III) involves use of microcontact printing to create a SAM support onto which the lipid bilayer is formed by exposure to a suspension of phospholipid vesicles;

(4) manufacturing (I) involves generating a membrane supporting pattern by photolithography, e-beam lithography, microcontact printing, fluid flow or ink-jet printing; and

(5) a device comprising an array of (I).

USE - (III) is adapted for use in the screening of drugs or the identification of potential pharmaceutical products (claimed).

(I) is useful in the manufacture of electrodes and/or biosensors or in the field of drug discovery. (III) can be used in the identification of compounds which alter the function of the membrane (e.g., membrane potential, pore-forming agents, ion-channel activity, systems engineered to report through ion channels, transport enzymes). An array of pixels containing the membrane, with for example, an ion channel incorporated in the membrane could be fabricated to permit the high throughput exposure of the ion channel to many diverse compounds in a search to identify compounds which affect ion channel function. (III) can also be used to determine the amount of selected component in a sample.

ADVANTAGE - (III) permits the measurement of electrical events with improved signal:noise ratio, permits measurement of the activity of a single ion channel, and has increased lifetime (claimed).

The fabrication, stability, function and quality of the membrane bilayer is improved over prior art membranes. The electrodes and/or sensors offer a reduced capacitance and/or increased resistance giving improved signal/noise ration in the detection of electronic events. The electrodes and/or sensors may also provide enhanced-detection of ion-selectivity of ion channel proteins (or peptides/ionophores), where the activity of individual ion channel molecules can be recorded and/or other electronic events, such as pore formation, transport process, changes in membrane potential, etc., may be monitored.

DESCRIPTION OF DRAWINGS - The figure shows the schematic representation of the solid supported bilayer.

TECH BIOTECHNOLOGY - Preferred Membrane: The size of less than 20 microns represents the largest in plane dimension, and the size of each of the bilayer regions in at least one dimension is less than 15 microns, preferably less than 1 microns, more preferably 500-750 nm. The membrane utilizes a controlled pattern, and comprises a self-assembled monolayer (SAM). The substrate is provided with anchor and/or packing molecules which contain functional group to facilitate surface attachment. The functional group is chosen from thiols, organosilanes, phosphoric and alkanolic acids. The head region of the anchor molecule is a lipophilic head group chosen from synthetic lipids or natural lipids including cholesterol or other sterol, phosphatidyl choline, phosphatidyl ethanolamine, mono-, di- or tri-methylated phosphatidyl ethanolamine, phosphatidic acid, phosphatidyl serine, phosphatidyl glycerol, phosphatidyl inositol, distributed head groups as found in cardiolipins, etc. The tail region of the anchor molecule is a saccharide, polysaccharide, oligomer of ethylene glycol, ethylene glycol, oligomers of propylene glycol, propylene glycol, amino acids, oligomers of amino acids, combinations of oligomers of ethylene glycol or propylene glycol functionalized with amino acids or other ionic species or its combination or derivative. The anchor molecule is a thiol cholesterol derivative or a lipid sulfide. The packing molecule comprises one or more hydrophilic compounds. The hydrophilic region of the hydrophilic compounds is composed of ethers, peptides, amides amines, esters, saccharides, polyols, charged groups (positive and/or negative), electroactive species or its combinations. The packing molecule is preferably an alcohol such as mercaptoethanol, or is a functionalized polyethylene oxide derivative. The ligands comprise lipophilic anchors or fusogens or a mixture of lipophilic anchors and fusogens. The fusogens comprise non-fusogenic compounds that become fusogenic by triggering. The fusogen is a non-metallic fusogen, a cation such as  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Al}^{3+}$ , comprises phosphate moiety or is a mixture of fusogens. The bilayer regions of the membrane comprise a controlled pattern, and the membrane is SAM. The bilayer regions are up to 100 microns in at least one dimension, and preferably a substantial portion of the bilayer regions are less than 20 microns in at least one dimension. The proportion of ligands seeded in the bilayer region is up to 50 mole% of the bilayer region. The substrate surface is a noble metal, such as gold, silver, platinum or palladium; an oxide surface such as silicon oxide,  $\text{Al}_x\text{O}_y$ ; a nitride surface, such as silicon nitride, a glass or an organic polymer. Preferably, the substrate is a polymer, and is coated with a photoresist such as SU8. The membrane material comprises a synthetic lipid or naturally

occurring lipid, or a modified lipid or its mixture. The membrane has incorporated in it one or more proteins, peptides, ionophores and/or other bioactive molecules. The membrane comprises a fragment of a natural cell, or contains a natural or engineered channel or natural or engineered channel modulator.

Preferred Device: (III) comprises an unit (sensor) for detecting the amount of a species of interest in a sample. The sensor comprises a reference electrode.

ABEX EXAMPLE - Chromium-glass photo-lithography masks were constructed using electron beam lithography. The mask consisted of seven separate patterns each being an array of circles spaced on a regular square lattice. The circle diameters ranged from 0.1 microns to 16 microns. The ratio of the circle area to surrounding area was kept constant. The mask was used to create arrays of raised columns in SU18 photoresist using standard lithographic techniques. Poly-dimethylsiloxane (PDMS) was applied to the patterned photoresist and baked at 60 degrees Centigrade for 1 hour. The baked PDMS was peeled off. Each individual patterned stamp had gross dimensions of 7 x 7 mm. Creation of a patterned gold surface was carried out as follows. 120 nm of gold was thermally evaporated onto a 5 nm chromium adhesion on cleaned glass microscope slides. The gold surfaces were cleaned in piranha solution (30% H<sub>2</sub>O<sub>2</sub>/70% H<sub>2</sub>SO<sub>4</sub>) for 1 minute followed by washing in pure water. The PDMS stamps were inked with 5 mM cholesteryl thiol in ethanol for 1 minute, dried and applied to the cleaned gold surfaces. The stamp was left on the surface for 1 minute to allow time for transfer. The stamp was carefully peeled off, the substrate rinsed with ethanol and then immersed for 2 minutes in 5 mM mercaptoethanol solution in ethanol followed by rinsing in copious quantities of ethanol. Lipid vesicles were prepared by hydrating egg-phosphatidylcholine in 0.1 M KCl for 1 hour to give a 1 mg/ml dispersion, then extruding through 50 nm diameter polycarbonate membranes for 18 cycles. The resultant vesicle diameters were 60-70 nm. The vesicles were diluted to a working concentration of 0.2 mg/ml with 0.1 M KCl. The vesicle solution was applied to the patterned surface and left for 90 minutes followed by rinsing in 0.1 M KCl. Electrochemical impedance measurements were made on a Solartron 1260 frequency response analyzer coupled to an EG and G 273A potentiostat. The cell was operated in two electrode mode with a coiled platinum wire counter electrode. A 12 mV r.m.s. AC potential was applied at the open circuit potential of the cell. The applied AC frequency was swept between 50 kHz and 300 MHz. Measurements were first made on the bare self-assembled monolayer (SAM) in 0.1 M KCl, then measurements made at regular intervals during the lipid deposition. Subsequently, the cell was rinsed with 0.1 M KCl and a final impedance measurement taken. The high frequency part of the impedance spectrum pertained to the organic film whilst the low frequency impedance was ascribed to the gold double layer capacitance. Fitting a simple RC series circuit to the data over the 50 kHz-1 MHz range gave a reasonable measure of the capacitance of the organic film.

FS CPI; GMPI; EPI

MC CPI: A12-E13; A12-L04B; A12-W11A; B01-D02; B04-B01B; B04-C01; B04-C02; B04-C03; B04-D01; B04-F01; B04-N04; B05-A01B; B05-A03B; B05-B01P; B05-B02C; B07-D03; B10-B02; B10-E03; B10-E04C; B11-C08; B12-K04E; D05-H09  
EPI: S03-E03C1; S03-E14A1



DNC C1997-140425 [199741]  
DNN N1997-363538 [199741]  
TI Apparatus for stamping surface of an article for forming microelectronic devices etc. - has flexible stamp having a predetermined pattern opposite support structure, pressure controlled chamber above support structure and unit for contacting stamp with article surface  
DC L03; P42; P74; P75; P84; U11  
IN DWORSKY L N; MARACAS G N; TOBIN K  
PA (MOTI-C) MOTOROLA INC  
CYC 6  
PI EP 794016 A1 19970910 (199741)\* EN 14[14]  
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US 5669303 A 19970923 (199744) EN 11[14]  
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JP 09240125 A 19970916 (199747) JA 11  
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KR 97066709 A 19971013 (199842) KO  
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ADT EP 794016 A1 EP 1997-103328 19970228; US 5669303 A US 1996-610776 19960304; JP 09240125 A JP 1997-46498 19970217; KR 97066709 A KR 1997-5121 19970220  
PRAI US 1996-610776 19960304  
IC ICM G03F007-00  
IPCR B05C0001-02 [I,A]; B05C0001-02 [I,C]; B05D0001-18 [I,A]; B05D0001-18 [I,C]; B05D0001-28 [I,A]; B05D0001-28 [I,C]; B41K0003-00 [I,C]; B41K0003-02 [I,A]; G03F0007-00 [I,A]; G03F0007-00 [I,C]; H01L0021-02 [I,C]; H01L0021-027 [I,A]  
EPC B05C0001-02F; B05D0001-18C; B05D0001-28; B05D0001-28C; G03F0007-00A  
ICO B82Y0010-00; L01J0219:00C2D8; L82T0201:01; L82T0201:01F; L82T0201:01S; M40B0060:14; Y01N0004:00; Y01N0006:00  
NCL NCLM 101/327.000  
NCLS 101/041.000  
FCL B41K0003-02; B81C0001-00; H01L0021-30 502 D; H01L0021-30 508 A  
FTRM 2C090; 3C081; 5F046; 5F146; 3C081/AA17; 3C081/BA09; 5F046/BA10; 3C081/BA42; 3C081/CA36; 3C081/CA37; 3C081/EA01; 3C081/EA07  
AB EP 794016 A1 UPAB: 20060113  
Apparatus (100) for stamping a surface (101) of an article (102) comprises (i) a first pressure-controlled chamber (112) above the surface (105) of a support structure (104); (ii) a flexible stamp (106) having an outer surface (108) and having a stamping surface (110) having a predetermined pattern, positioned above the structure (104) so the stamping surface (110) opposes the surface (105) and is placed within the first pressure controlled chamber (112); (iii) device (126) positioned outside the first pressure-controlled chamber (112) for wetting the stamping surface (110) with a solution having a self-assembled monolayer-forming molecular species; and (iv) device for controllably contacting the stamping surface (110) with the surface (101) of the article (102) so that the predetermined pattern of the stamping surface (110) is stamped onto the surface (101) of the article (102). The support structure (104) and the first pressure-controlled chamber (112) are designed so that the article (102) is positioned on the surface (105) of the support structure (104) and within the first pressure-controlled chamber (112) and so that the surface (101) of the article (102) opposes the stamping surface (110). Also claimed are (1) another similar apparatus; and (2) a method for stamping a surface (101) of an article (102).  
USE - Apparatus is used in forming microelectronic devices, sensors, and optical elements.  
ADVANTAGE - The surface can be stamped in a reproducible and uniform fashion. method and apparatus are cost effective and can be used for patterning

large-area surfaces .

ABDT EP794016

Apparatus (100) for stamping a surface (101) of an article (102) comprises (i) a first pressure-controlled chamber (112) above the surface (105) of a support structure (104); (ii) a flexible stamp (106) having an outer surface (108) and having a stamping surface (110) having a predetermined pattern, positioned above the structure (104) so the stamping surface (110) opposes the surface (105) and is placed within the first pressure controlled chamber (112); (iii) device (126) positioned outside the first pressure-controlled chamber (112) for wetting the stamping surface (110) with a solution having a self-assembled monolayer-forming molecular species; and (iv) device for controllably contacting the stamping surface (110) with the surface (101) of the article (102) so that the predetermined pattern of the stamping surface (110) is stamped onto the surface (101) of the article (102). The support structure (104) and the first pressure-controlled chamber (112) are designed so that the article (102) is positioned on the surface (105) of the support structure (104) and within the first pressure-controlled chamber (112) and so that the surface (101) of the article (102) opposes the stamping surface (110). Also claimed are (1) another similar apparatus; and (2) a method for stamping a surface (101) of an article (102).

USE

Apparatus is used in forming microelectronic devices, sensors, and optical elements.

ADVANTAGE

The surface can be stamped in a reproducible and uniform fashion. Method and apparatus are cost effective and can be used for patterning large-area surfaces.

PREFERRED APPARATUS

A second pressure-controlled chamber is positioned above the flexible stamp, so the outer surface of the stamp is positioned in the chamber. The step of wetting the stamping surface with a solution having a self-assembled monolayer-forming molecular species includes providing a sponge-like substrate with the solution and contacting the stamping surface of the flexible stamp with the surface of the sponge-like substrate and wetting the stamping surface with the solution. The flexible stamp is removed from the surface of the article in a controlled manner, forming a self-assembled monolayer of the self-assembled monolayer forming molecular species on the article's surface; the removal also includes the addition of an inert gas to the first pressure controlled chamber at a controlled rate so that the flexible stamp peels off the article's surface without distorting the predetermined pattern of the monolayer.

(JM)

FS CPI; GMPI; EPI

MC CPI: L03-G04B; L04-D

EPI: U11-C; U11-C04D; U11-C07

L86 ANSWER 42 OF 66 WPIX COPYRIGHT 2011

THOMSON REUTERS on STN

AN 1997-437302 [199741] WPIX Full-text

DNC C1997-140424 [199741]

DNN N1997-363537 [199741]

TI Patterning of large area microelectronic devices - comprises contacting monolayer-forming material-wetted contact surfaces with resist layer to impart predetermined pattern, then etching

DC L03; P42; P78; P84; U11

IN DWORSKY L N; GORONKIN H; LEGGE R N; MARACAS G N

PA (MOTI-C) MOTOROLA INC; (FRSE-C) FREESCALE SEMICONDUCTOR INC

CYC 6

PI EP 794015 A1 19970910 (199741)\* EN 14[20]  
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 JP 10012545 A 19980116 (199813) JA 9  
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 US 5725788 A 19980310 (199817) EN 12[20]  
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 KR 97067648 A 19971013 (199843) KO  
 <--  
 KR 513409 B 20051221 (200680) KO  
 <--

ADT EP 794015 A1 EP 1997-102669 19970219; US 5725788 A US 1996-608022 19960304; KR 97067648 A KR 1997-6581 19970228; JP 10012545 A JP 1997-63756 19970303; KR 513409 B KR 1997-6581 19970228

FDT KR 513409 B Previous Publ KR 97067648 A

PRAI US 1996-608022 19960304

IC ICM H01L021-28

IPCR B05D0001-18 [I,A]; B05D0001-18 [I,C]; B05D0001-28 [I,A]; B05D0001-28 [I,C]; G03F0007-00 [I,A]; G03F0007-00 [I,C]; G03F0007-16 [I,A]; G03F0007-16 [I,C]; H01L0021-02 [I,C]; H01L0021-027 [I,A]; H01L0021-033 [I,A]; H01L0021-302 [I,A]; H01L0021-3065 [I,A]; H01L0021-308 [I,A]

EPC B05D0001-18C; B05D0001-28; B05D0001-28C; G03F0007-00A; G03F0007-16A; H01L0021-033B; H01L0021-033F4; H01L0021-308B

ICO B82Y0010-00; L82T0201:01; L82T0201:01S; Y01N0004:00; Y01N0006:00

FCL H01L0021-30 502 D; H01L0021-30 561; H01L0021-302 104 H; H01L0021-302 H

FTRM 5F004; 5F046; 5F146; 5F004/EA03; 5F004/EA04; 5F004/EA05; 5F004/EA06; 5F004/EA07; 5F046/JA27

AB EP 794015 A1 UPAB: 20060113

A patterning method comprises: (a) forming a relief in the first surface of a layer (52) of flexible material, the relief having contacting surfaces (60) defining a first pattern, and including an indentation defining a second pattern; (b) wetting the contacting surfaces with a solution containing a self-assembled monolayer-forming molecular species; (c) forming a layer (32) of resist material which has an outer surface (34) to which the monolayer-forming species binds; (d) contacting the netted contacting surfaces with the outer surface of the resist; (e) removing the contacting surfaces to form the self-assembled monolayer (SAM) on the outer surface of the resist and providing an exposed area of the outer surface of the resist having the second predetermined pattern; and (f) etching the resist with an etchant inert to the monolayer, to provide an exposed area of the article (30) surface having the second predetermined pattern.

Also claimed is a large area stamp (50) for applying the monolayer to a layer of resist material having a surface area greater than 1 inch<sup>2</sup>, comprising a relief as above formed in the first surface of an elastomeric material (52). The first surface also has a surface area greater than 1 inch<sup>2</sup>.

USE - In the fabrication of microelectronic devices, sensors and optical elements.

ADVANTAGE - The method is cost-effective and reproducible. ABDT

EP794015

A patterning method comprises:  
 (a) forming a relief in the first surface of a layer (52) of flexible material, the relief having contacting surfaces

(60) defining a first pattern, and including an indentation defining a second pattern;  
 (b) wetting the contacting surfaces with a solution containing a self-assembled monolayer-forming molecular species;  
 (c) forming a layer (32) of resist material which has an outer surface (34) to which the monolayer-forming species binds;  
 (d) contacting the netted contacting surfaces with the outer surface of the resist;  
 (e) removing the contacting surfaces to form the self-assembled monolayer (SAM) on the outer surface of the resist and providing an exposed area of the outer surface of the resist having the second predetermined pattern; and  
 (f) etching the resist with an etchant inert to the monolayer, to provide an exposed area of the article (30) surface having the second predetermined pattern.  
 Also claimed is a large area stamp (50) for applying the monolayer to a layer of resist material having a surface area greater than 1 inch <sup>2</sup>, comprising a relief as above formed in the first surface of an elastomeric material (52). The first surface also has a surface area greater than 1 inch <sup>2</sup>.

## USE

In the fabrication of microelectronic devices, sensors and optical elements.

## ADVANTAGE

The method is cost-effective and reproducible.

## PREFERRED METHOD

The SAM covers at least 1 inch <sup>2</sup> of the resist material. The wetting step involves using a solution containing (i) an alkylthiol or (ii) an alkyl trichlorosilane, where the resist layer is respectively (i) Ti, Al, Au, Cr, Ni, Cu or Ag, or (ii) SiO <sub>2</sub>, Al <sub>2</sub>O <sub>3</sub>, Si <sub>3</sub>N <sub>4</sub>, Ti, Al, Ni, Cu or Cr. An alkoxysilane may be used when the resist layer is a dielectric.

## PREFERRED STAMP

The first surface has contouring properties and the material includes a stiffening agent within it at sufficient distance from the first surface so as not to degrade the contouring properties. The stiffening agent provides structural support to maintain the first and second patterns in the first surface. Piezoelectric structures may be embedded in the elastomeric material, which when applied with an appropriate voltage, can maintain and control the first and second patterns by producing appropriate corrective mechanical forces.

(AA)

FS CPI; GMPI; EPI

MC CPI: L03-J; L04-C06

EPI: U11-C; U11-C04D; U11-C07

=> d 43-66 ibib abs ind

L86 ANSWER 43 OF 66 JAPIO (C) 2011 JPO on STN

ACCESSION NUMBER: 1998-012545 JAPIO Full-text

TITLE: APPARATUS AND METHOD FOR FORMING PATTERN ON SURFACE

INVENTOR: MARACAS GEORGE N; LEGGE RONALD N; GORONKIN HERBERT; DWORSKY LAWRENCE N

PATENT ASSIGNEE(S): MOTOROLA INC

## PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 10012545	A	19980116	Heisei	H01L021-027

## APPLICATION INFORMATION

STN FORMAT: JP 1997-63756 19970303  
 ORIGINAL: JP09063756 Heisei  
 PRIORITY APPLN. INFO.: US 1996-608022 19960304  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1998

AN 1998-012545 JAPIO Full-text  
 AB PROBLEM TO BE SOLVED: To form a pattern which is reproducible on a large-area surface with a high cost efficiency. SOLUTION: An apparatus 95 has a large-area stamp 50 for forming a self- aggregated monomolecular layer (SAM) of a molecular species on the surface of a resist layer 32, formed on the surface of a work 30. This stamp 50 has an elastomer layer 52 with mechanical structures buried therein to reinforce the stamp 50 and deform it to thereby control a stamped pattern. This method comprises forming the resist layer 32 on the surface of the work 30, forming the SAM on the surface 34 of the resist layer 32, etching the resist layer 32, and etching or plating the surface of the work 30. COPYRIGHT: (C)1998,JPO  
 IC ICM H01L021-027  
 ICS H01L021-3065

L86 ANSWER 44 OF 66 JAPIO (C) 2011 JPO on STN  
 ACCESSION NUMBER: 1996-027448 JAPIO Full-text  
 TITLE: LATEX FOR ADHESIVE AND CHLOROPRENE-BASED  
 ADHESIVE COMPOSITION USING THE SAM  
 INVENTOR: WAKAYAMA HISAMASA; HAYASHI TADASHI; HARADA YUKIHIKO  
 PATENT ASSIGNEE(S): TOSOH CORP  
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 08027448	A	19960130	Heisei	C09J111-02

## APPLICATION INFORMATION

STN FORMAT: JP 1994-318644 19941221  
 ORIGINAL: JP06318644 Heisei  
 PRIORITY APPLN. INFO.: JP 1994-94824 19940509  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1996

AN 1996-027448 JAPIO Full-text  
 AB PURPOSE: To obtain a latex for adhesive comprising a mixture of plural latexes containing specific copolymers having different molecular weight and excellent in ordinary-temperature and high-temperature adhesive force, softening temperature, water resistance and latex stability.  
 CONSTITUTION: This latex for adhesive is a copolymer of a chloroprene monomer and a carboxyl group-containing vinyl monomer and is composed of a mixture of latexes of (A) a copolymer having 200000-500000 weight-average molecular weight of a part soluble in an organic solvent with (B) a copolymer having 500000-800000 weight-average molecular weight of a part soluble in an organic solvent [preferably in (90/10) to (10/90) dried weight ratio of components A/B]. Furthermore, the chloroprene-based adhesive is obtained by blending 10-60 pts.weight of a tackiness-providing agent such as a phenolic resin with 1-5 pts.weight of a metal oxide or a metal hydroxide.  
 COPYRIGHT: (C)1996,JPO

IC ICM C09J111-02  
ICS C08L033-02; C09J147-00

L86 ANSWER 45 OF 66 JAPIO (C) 2011 JPO on STN  
ACCESSION NUMBER: 1982-134499 JAPIO Full-text  
TITLE: S-ADENOSYL-L-METHIONINE-CONTAINING COMPOSITION AND  
ITS PREPARATION  
INVENTOR: KAMISAKI YUICHI; HIRAI KEIKO; KAWARADA HAJIME;  
WATANABE KIYOSHI  
PATENT ASSIGNEE(S): KANEGAFUCHI CHEM IND CO LTD  
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 57134499	A	19820819	Showa	C07H019-16

## APPLICATION INFORMATION

STN FORMAT: JP 1981-21908 19810216  
ORIGINAL: JP56021908 Showa  
PRIORITY APPLN. INFO.: JP 1981-21908 19810216  
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
Applications, Vol. 1982

AN 1982-134499 JAPIO Full-text

AB PURPOSE: The titled composition having improved shelf stability, safety to living body, productivity of industrial scale and economical advantage, comprising S-adenosyl-L-methionine, sulfate radical, and magnesium sulfate in a specific molar ratio. CONSTITUTION: A white powder composition comprising S-adenosyl-L-methionine- L (referred to as SAM afterward), sulfate radical, and magnesium sulfate in a molar ratio of SAM: sulfate radical: magnesium sulfate of 1:(0.5&sim;1):(2&sim;6), preferably 1:(0.6&sim;0.9):(3&sim;5). An aqueous solution comprising given amounts of the three components is prepared and brought into contact with an organic solvent to be mixed with this aqueous solution, to precipitate the desired composition, or the aqueous solution is vaporized to dryness, to give the desired composition. A sulfate is used as SAM, when the amount of the sulfate radical is more than the given amount based on SAM in the aqueous solution of SAM sulfate, the aqueous solution is brought into contact with an anion exchange resin or magnesium hydroxide is added to it. When the amount of the sulfate radical is less than the given amount, a fixed amount of the sulfate radical is added to the aqueous solution to adjust it to a proper amount of sulfate radical. COPYRIGHT:  
(C)1982,JPO&Japio

IC ICM C07H019-16

L86 ANSWER 46 OF 66 JAPIO (C) 2011 JPO on STN  
ACCESSION NUMBER: 2007-184592 JAPIO Full-text  
TITLE: MULTI-LAYER PRINTED CIRCUIT BOARD AND METHOD FOR  
FABRICATING THE SAME  
INVENTOR: YANG MING-HUAN; WANG CHUNG-WEI; WU CHIA-CHI; CHENG  
CHAO-KAI; TSENG TZY-JANG; LEE CHANG-MING; YU  
CHENG-PO; YU CHENG-HUNG  
PATENT ASSIGNEE(S): IND TECHNOL RES INST  
UNIMICRON TECHNOLOGY CORP  
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2007184592	A	20070719	Heisei	

## APPLICATION INFORMATION

STN FORMAT: JP 2006-346159 20061222

ORIGINAL: JP2006346159 Heisei  
 PRIORITY APPLN. INFO.: TW 2005-147547 20051230  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 2007

AN 2007-184592 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To provide a method for fabricating a double-sided or multi-layer printed circuit board (PCB) by ink-jet printing so as to reduce a fabrication cost and to satisfy various requests on the market.  
 SOLUTION: The method for fabricating a double-sided or multi-layer printed circuit board (PCB) by ink-jet printing that includes providing a substrate 100, forming a first self-assembly membrane (SAM) 103 on at least one side of the substrate, forming a non-adhesive membrane 105 on the first SAM 103, forming at least one microhole 107 in the substrate, forming a second SAM 103 on a surface of the microhole, providing catalyst particles on the at least one side of the substrate and on the surface of the microhole, and forming a catalyst circuit pattern 110 on the substrate.

COPYRIGHT: (C)2007,JP0&INPIT

IPCI H05K0003-42 [I,A]; H05K0003-46 [I,A]; H05K0003-18 [N,A];  
 H05K0003-42 [I,C\*]; H05K0003-46 [I,C\*]; H05K0003-18 [N,C\*]

L86 ANSWER 47 OF 66 JAPIO (C) 2011 JPO on STN

ACCESSION NUMBER: 2006-057167 JAPIO Full-text

TITLE: METHOD FOR FORMING WIRING BY PLATING  
 INVENTOR: YOSHINAGA FUMITAKA; BESSHO TAKESHI; SUGIMURA  
 HIROYUKI

PATENT ASSIGNEE(S): TOYOTA MOTOR CORP

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
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JP 2006057167	A	20060302	Heisei	
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#### APPLICATION INFORMATION

STN FORMAT: JP 2004-242748 20040823

ORIGINAL: JP2004242748 Heisei

PRIORITY APPLN. INFO.: JP 2004-242748 20040823

SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 2006

AN 2006-057167 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To provide a technology for forming wiring with a desired pattern on the surface of a substrate, by selectively depositing the plating catalyst into the desired pattern on the surface.

SOLUTION: The wiring-forming method is a method for forming the wiring by selectively plating a conductor on a resin substrate, and comprises: a film-forming step of forming a self-assembled monolayer on the surface of the substrate; an exposure step of selectively irradiating the self-assembled monolayer with light; a cleaning step of removing a light-exposed portion of the self-assembled monolayer; a catalyst-providing step of providing a plating catalyst on the surface of the substrate; and an electroless plating step of electroless-plating the conductor on the surface of the substrate. COPYRIGHT: (C)2006,JP0&NCIPI

IPCI C23C0018-28 [I,A]; C23C0018-18 [I,A]; C23C0018-20 [I,A]; C25D0005-54 [I,A]; C25D0005-56 [I,A]; C25D0007-00 [I,A]; H01L0021-288 [I,A];  
 H05K0003-18 [I,A]; H01L0021-3205 [I,A];  
 C23C0018-20 [I,C\*]; C23C0018-18 [I,C\*]; C23C0018-20 [I,C\*];  
 C25D0005-54 [I,C\*]; C25D0005-54 [I,C\*]; C25D0007-00 [I,C\*];  
 H01L0021-02 [I,C\*]; H05K0003-18 [I,C\*]; H01L0021-02 [I,C\*]

L86 ANSWER 48 OF 66 JAPIO (C) 2011 JPO on STN

ACCESSION NUMBER: 2005-331564 JAPIO Full-text

TITLE: METHOD FOR FORMING THIN FILM PATTERN,

INVENTOR: AND DEVICE  
 TAKAKUWA ATSUSHI; AMAKO ATSUSHI  
 PATENT ASSIGNEE(S): SEIKO EPSON CORP  
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2005331564	A	20051202	Heisei	G03F007-20

## APPLICATION INFORMATION

STN FORMAT: JP 2004-147535 20040518  
 ORIGINAL: JP2004147535 Heisei  
 PRIORITY APPLN. INFO.: JP 2004-147535 20040518  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2005

AN 2005-331564 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To provide a method for forming a thin film pattern for easily forming a fine thin film pattern in a short period of time with high definition, and to provide a device having a thin film pattern obtained by the forming method.

SOLUTION: The method for forming a thin film pattern includes steps of: forming a self-assembled monolayer on a substrate 50; exposing the self-assembled monolayer to laser light producing a predetermined interference pattern by passing the light emitted from a laser light source through a master so as to form a self-assembled monolayer pattern 52; and selectively distributing a thin film material on the self-assembled monolayer pattern 52 to form a thin film pattern 55. COPYRIGHT: (C)2006,JPO&NCIPI

IC ICM G03F007-20

ICS G03F007-40; H01L021-027; H01L041-187; H01L041-22

ICA C23C016-04

L86 ANSWER 49 OF 66 JAPIO (C) 2011 JPO on STN

ACCESSION NUMBER: 2005-033184 JAPIO Full-text  
 TITLE: FORMATION OF NARROW PATTERN USING EDGES  
 OF SELF-ORGANIZED MONOMOLECULAR FILM

INVENTOR: AIZENBERG JOANNA; VICRAM C SUNDAR

PATENT ASSIGNEE(S): LUCENT TECHNOL INC

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2005033184	A	20050203	Heisei	H01L021-3213

## APPLICATION INFORMATION

STN FORMAT: JP 2004-151141 20040521  
 ORIGINAL: JP2004151141 Heisei  
 PRIORITY APPLN. INFO.: US 2003-442774 20030521  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2005

AN 2005-033184 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To provide a method for preparing a structure on a semiconductor substrate.

SOLUTION: To form a groove portion, a patterned layer is formed on a portion of a base layer such that the patterned layer forms a target area disposed adjacently to edges of the patterned layer. A self organized monomolecular film ( SAM) is chemically coupled to the base layer, next to but except for the patterned layer. The base layer is removed in the target area. Wiring is formed in the same way except for replacing a first SAM with a second SAM in the target area. Next, the base layer outside the target area is removed, or conductive metal crystal is grown in the target area. Such a structure is



advantageously used in manufacturing a large number of active or passive electronic-devices such as a field effect transistor. COPYRIGHT:

(C) 2005, JPO&NCIPI

IC ICM H01L021-3213

ICS B82B003-00; H01L021-336; H01L029-06; H01L029-786; H01L051-00

L86 ANSWER 50 OF 66 JAPIO (C) 2011 JPO on STN

ACCESSION NUMBER: 2004-095127 JAPIO Full-text

TITLE: DISK DRIVE

INVENTOR: OSHIMI IWAQ; ITO KIYOTADA; ONOYAMA KATSUMOTO;

HAMADA YOSUKE

PATENT ASSIGNEE(S): HITACHI LTD

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2004095127	A	20040325	Heisei	G11B020-10

#### APPLICATION INFORMATION

STN FORMAT: JP 2002-258761 20020904

ORIGINAL: JP2002258761 Heisei

PRIORITY APPLN. INFO.: JP 2002-258761 20020904

SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2004

AN 2004-095127 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To improve the reliability of information recording/reproduction by preventing data corruption by erroneous selection of a head and to prevent format efficiency from falling because of the reliability in a disk drive that performs head positioning by a servo mechanism.

SOLUTION: A SAM pattern in a servo information area is changed for each head and recorded, the recorded SAM pattern is read to thereby discriminate which head accesses the surface of the SAM pattern, and the head is compared with a head that instructs the access to perform an error check. In addition, a marker pattern of rotation synchronous component compensation data added to servo information is used to perform an error check of the accessing head.

COPYRIGHT: (C)2004, JPO

IC ICM G11B020-10

ICS G11B020-12; G11B020-18

L86 ANSWER 51 OF 66 JAPIO (C) 2011 JPO on STN

ACCESSION NUMBER: 2003-076036 JAPIO Full-text

TITLE: METHOD FOR FORMING PATTERN IN SELF

ASSEMBLED MONOLAYER OF ORGANIC MOLECULE

INVENTOR: NAKAMURA TORU; BABA MASAKAZU

PATENT ASSIGNEE(S): NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL & TECHNOLOGY

NEC CORP

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2003076036	A	20030314	Heisei	G03F007-40

#### APPLICATION INFORMATION

STN FORMAT: JP 2001-265767 20010903

ORIGINAL: JP2001265767 Heisei

PRIORITY APPLN. INFO.: JP 2001-265767 20010903

SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2003

AN 2003-076036 JAPIO Full-text  
 AB PROBLEM TO BE SOLVED: To stably form a self assembled monolayer (SAM) of organic molecules having high dependence of adsorbing property to a substrate on the cleanliness of the substrate surface for growing. SOLUTION: A clean surface and a contaminated surface are formed on the surface of the substrate 11 so that the self assembled monolayer (SAM) of organic molecules 17 is selectively formed on the clean surface. COPYRIGHT: (C)2003,JPO  
 IC ICM G03F007-40  
 ICS G03F007-42; H01L021-027

L86 ANSWER 52 OF 66 JAPIO (C) 2011 JPO on STN  
 ACCESSION NUMBER: 2002-294469 JAPIO Full-text  
 TITLE: METHOD FOR SELECTIVELY ETCHING SAM  
 SUBSTRATE  
 INVENTOR: BIETSCH ALEXANDER; DELAMARCHE EMMANUEL; GEISSLER  
 MATTHIAS; MICHEL BRUNO; SCHMIDT HEINZ  
 PATENT ASSIGNEE(S): INTERNATL BUSINESS MACH CORP <IBM>  
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2002294469	A	20021009	Heisei	C23F001-00

## APPLICATION INFORMATION

STN FORMAT: JP 2002-84108 20020325  
 ORIGINAL: JP2002084108 Heisei  
 PRIORITY APPLN. INFO.: EP 2001-810300 20010326  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 2002

AN 2002-294469 JAPIO Full-text  
 AB PROBLEM TO BE SOLVED: To provide a fine structure by etching a substrate having a region covered with self-assembly monomolecule(SAM).  
 SOLUTION: A wet etching system for selectively forming a pattern on the substrate having the region covered with SAM and controlling an etching profile, includes (a) a fluid etching solution, and (b) additives having higher affinity for the region covered with the SAM than for the other region. The method for selectively forming the pattern on the substrate having the region covered with the SAM and controlling the etching profile, includes (a) a step of providing a fluid etching solution, (b) a step of adding the additives having the higher affinity for the region covered with SAM than for the other region to the above etching solution, and (c) a step of etching the above substrate with the above fluid etching solution containing the above additives. COPYRIGHT: (C)2002,JPO  
 IC ICM C23F001-00  
 ICS C23F001-34; C23F001-40

L86 ANSWER 53 OF 66 JAPIO (C) 2011 JPO on STN  
 ACCESSION NUMBER: 2001-312094 JAPIO Full-text  
 TITLE: TONER AND IMAGE FORMING METHOD  
 INVENTOR: SUZUKI SHUNJI  
 PATENT ASSIGNEE(S): CANON INC  
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2001312094	A	20011109	Heisei	G03G009-083

## APPLICATION INFORMATION

STN FORMAT: JP 2000-129048 20000428  
 ORIGINAL: JP2000129048 Heisei

PRIORITY APPLN. INFO.: JP 2000-129048 20000428  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 2001

AN 2001-312094 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To provide a toner which decreases shaping or scratching of an organic photoreceptor, fixing roller, fixing film or the like, which extends the exchange life of the organic photoreceptor or the like, and which can form an image of high quality for a long time without causing any filming, melt sticking, white spots, black spots, contamination on the back face of an image. SOLUTION: In the toner containing at least toner particles and hydrophobic inorganic fine powder, the toner particles contain at least a binder resin, magnetic particles and wax and have the following properties. (a) The peak area of melting of the wax measured by DSC of the toner is  $\geq 5$  J/g, and (b) by FE-SAM observation of the toner particle surface, the average number  $\alpha$ ; of magnetic particles identified per unit area ( $\mu\text{m}^2$ ) of the toner particle surface at 1.0 kV acceleration voltage, and the average number  $\beta$ ; of the magnetic particles identified per unit area ( $\mu\text{m}^2$ ) of the toner particle surface at 2.0 kV acceleration voltage satisfy  $1.1 \leq \beta/\alpha \leq 50.0$  when  $\alpha \neq 0$  and  $0.1 \leq \beta \leq 20.0$  when  $\alpha = 0$ .

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IC ICM G03G009-083

ICS G03G009-08

L86 ANSWER 54 OF 66 JAPIO (C) 2011 JPO on STN

ACCESSION NUMBER: 2001-247540 JAPIO Full-text

TITLE: METHOD OF PRODUCING PHOTOFUNCTIONAL SELF-ORGANIZED  
 MONOMOLECULAR FILM

INVENTOR: FUKUSHIMA HITOSHI; MIYASHITA SATORU

PATENT ASSIGNEE(S): SEIKO EPSON CORP

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2001247540	A	20010911	Heisei	C07C323-05

#### APPLICATION INFORMATION

STN FORMAT: JP 2000-61255 20000306

ORIGINAL: JP2000061255 Heisei

PRIORITY APPLN. INFO.: JP 2000-61255 20000306

SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 2001

AN 2001-247540 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To introduce an effective photopolymerization method capable of achieving a high intermolecular conjugated polymerization degree in an ultraviolet-irradiating polymerization process in a conjugate triple bond-based thiol SAM film, and capable of preventing ultraviolet oxidation on the surface of the SAM film by ultraviolet irradiation.

SOLUTION: The ultraviolet irradiation is carried out in an air-evacuated closed system in a process for carrying out an intermolecular cross-linking reaction under the irradiation of the ultraviolet in the interior of a self-organized molecular film. Concretely, the production method is characterized in that the intermolecular cross-linking reaction is carried out in a sealed atmosphere substituted with an inert gas at the time of irradiation with the ultraviolet. The method for producing the self-organized molecular film is also characterized in that the intermolecular cross-linking reaction is carried out in a state of the self-organized molecular film and a substrate left in a high vacuum state by sealing. COPYRIGHT: (C)2001,JPO

IC ICM C07C323-05

ICS C08F002-48; C08F038-00; C08J005-18; G03F007-025

ICI C08L049:00

L86 ANSWER 55 OF 66 PASCAL COPYRIGHT 2011 INIST-CNRS. ALL RIGHTS RESERVED. on STN DUPLICATE 2

ACCESSION NUMBER: 2005-0459412 PASCAL Full-text

COPYRIGHT NOTICE: Copyright .COPYRGT. 2005 INIST-CNRS. All rights reserved.

TITLE (IN ENGLISH): Tribology of PFPE overcoated self-assembled monolayers deposited on Si surface

AUTHOR: SATYANARAYANA N.; SINHA Sujeet K.

CORPORATE SOURCE: Department of Mechanical Engineering, National University of Singapore, 9 Engineering Drive I, Singapore 117576, Singapore

SOURCE: Journal of physics. D, Applied physics : (Print), (2005), 38(18), 3512-3522, 46 refs.  
ISSN: 0022-3727 CODEN: JPAPBE

DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United Kingdom

LANGUAGE: English

AVAILABILITY: INIST-5841, 354000131676640300

AN 2005-0459412 PASCAL Full-text

CP Copyright .COPYRGT. 2005 INIST-CNRS. All rights reserved.

AB Friction and wear characteristics of monomolecular layers of self-assembled monolayers (SAMs) with and without perfluoropolyether (PFPE) overcoat were studied using ball-on-disk experiments. Ultra-thin layer of PFPE was dip-coated onto two different SAMs, one with non-reactive terminal group (octadecyltrichlorosilane (OTS)) and the other with reactive terminal group (3-aminopropyltrimethoxysilane (APTMS)), which were formed on Si substrate by self-assembly. The effects of PFPE overcoating on physical and chemical properties were evaluated using contact angle measurement and x-ray photoelectron spectroscopy. For a comparison, PFPE was also coated onto the Si surface and their properties were evaluated. All PFPE modified surfaces were baked at 150°C for 2 h, to investigate the effect of thermal treatment on tribological properties. PFPE coating has shown higher water contact angles irrespective of the SAM surface. Coating of PFPE on both SAM surfaces has lowered their coefficients of friction. PFPE overcoating has shown remarkable increase in the wear resistance when it was coated on reactive APTMS SAM and little increase on OTS SAM. Thermal treatment after PFPE coating onto SAMs further reduced the coefficient of friction to a smaller extent. Moreover, thermal treatment has shown an additional increase in wear-life by approximately 30% in the case of PFPE coated APTMS SAM surface and a decrease in the wear-life in the case of PFPE coated OTS SAM. The reasons for these observed phenomena are explained in terms of the amounts of PFPE bonded or mobile, surface energies of SAMs, uniformity and molecular packing of SAM surfaces.

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CC 001B60B20Q; Physics; Condensed matter physics, Materials science; Mechanical properties

CCFR 001B60B20Q; Physique; Physique de l'etat condense, Science des matériaux; Propriétés mécaniques

CCES 001B60B20Q; Física; Física del estado condensado, Ciencia de los materiales; Propiedades mecánicas

CT Tribology; Friction; Wear; Self-assembly; Contact angle; X-ray photoelectron spectra; Surface properties; Heat treatments; Coatings; Friction factor; Wear resistance; Self-assembled layers; Silicon; Thin films; Coated material

CTFR Tribologie; Frottement; Usure; Autoassemblage; Angle contact; Spectre photoelectron RX; Propriété surface; Traitement thermique;

Revetement; Coefficient frottement; Resistance usure; Couche  
 autoassemblée; Silicium; Couche mince; Matériau revêtu; Si; 6220Q  
 CTES Material revestido

L86 ANSWER 56 OF 66 PASCAL COPYRIGHT 2011 INIST-CNRS. ALL RIGHTS  
 RESERVED. on STN

ACCESSION NUMBER: 2006-0495385 PASCAL Full-text  
 COPYRIGHT NOTICE: Copyright .COPYRG. 2006 INIST-CNRS. All rights  
 reserved.

TITLE (IN ENGLISH): Soft lithography using perfluorinated polyether  
 molds and PRINT technology for fabrication of 3-D  
 arrays on glass substrates  
 Emerging lithographic technologies X : 21-23  
 February 2006, San Jose, California, USA

AUTHOR: WILES Kenton B.; WILES Natasha S.; HERLIHY Kevin  
 P.; MAYNOR Benjamin W.; ROLLAND Jason P.; DESIMONE  
 Joseph M.  
 LERCEL Michael James (ed.)

CORPORATE SOURCE: Department of Chemistry, University of North  
 Carolina Chapel Hill, Chapel Hill, North Carolina,  
 27599, United States; Liquidia Technologies Inc,  
 Research Triangle Park, NC 27709, United States;  
 Department of Pharmacology, University of North  
 Carolina Chapel Hill, Chapel Hill, North Carolina,  
 27599, United States; Lineberger Comprehensive  
 Cancer Center, University of North Carolina Chapel  
 Hill, Chapel Hill, North Carolina, 27599, United  
 States

SOURCE: Society of photo-optical instrumentation  
 engineers, United States (org-cong.)  
 Proceedings of SPIE, the International Society for  
 Optical Engineering, (2006), 6151(p.1),  
 VOL 2,61513F.1-61513F.9, 14 refs.  
 Conference: 10 Emerging lithographic technologies.  
 Conference, (United States), 2006  
 ISSN: 0277-786X  
 ISBN: 0-8194-6194-6  
 Journal; Conference

DOCUMENT TYPE:

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United States

LANGUAGE: English

AVAILABILITY: INIST-21760, 354000153496901000

AN 2006-0495385 PASCAL Full-text

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AB The fabrication of nanometer size structures and complex devices for  
 microelectronics is of increasing importance so as to meet the challenges of  
 large-scale commercial applications. Soft lithography typically employs  
 elastomeric polydimethylsiloxane (PDMS) molds to replicate micro- and  
 nanoscale features. However, the difficulties of PDMS for nanoscale  
 fabrication include inherent incompatibility with organic liquids and the  
 production of a residual scum or flash layer that link features where the  
 nano-structures meet the substrate. An emerging technologically advanced  
 technique known as Pattern Replication in Non-wetting Templates (PRINT)  
 avoids both of these dilemmas by utilizing photocurable perfluorinated  
 polyether (PFPE) rather than PDMS as the elastomeric molding material. PFPE  
 is a liquid at room temperature that exhibits low modulus and high gas  
 permeability when cured. The highly fluorinated PFPE material allows for  
 resistance to swelling by organic liquids and very low surface energies,  
 thereby preventing flash layer formation and ease of separation of PFPE molds  
 from the substrates. These enhanced characteristics enable easy removal of

the stamp from the molded material, thereby minimizing damage to the nanoscale features. Herein we describe that PRINT can be operated in two different modes depending on whether the objects to be molded are to be removed and harvested (i.e. to make shape specific organic particles) or whether scum free objects are desired which are adhered onto the substrate (i.e. for scum free pattern generation using imprint lithography). The former can be achieved using a non-reactive, low surface energy substrate (PRINT: Particle Replication in Non-wetting Templates) and the latter can be achieved using a reactive, low surface energy substrate (PRINT: Pattern Replication in Non-wetting Templates). We show that the PRINT technology can be used to fabricate nano-particle arrays covalently bound to a glass substrate with no scum layer. The nanometer size arrays were fabricated using a PFPE mold and a self-assembled monolayer (SAM) fluorinated glass substrate that was also functionalized with free-radically reactive SAM methacrylate moieties. The molded polymeric materials were covalently bound to the glass substrate through thermal curing with the methacrylate groups to permit three dimensional array fabrication. The low surface energies of the PFPE mold and fluorinated glass substrate allowed for no flash layer formation, permitting well resolved structures.

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 CC 001D03F17; Applied sciences; Electronics; Microelectronics, Solid state devices; Microtechnology, Materials science  
 CCFR 001D03F17; Sciences appliquees; Electronique; Microelectronique, Dispositifs a l'etat solide; Microtechnologie, Science des materiaux  
 CCES 001D03F17; Ciencias aplicadas; Electronica; Microelectronica, Dispositivos en el estado solido; Microtecnologia, Ciencia de los materiales  
 CT Lithography; Manufacturing process; Electronic component; Large scale; Nanostructure; Replication; Room temperature; Hardening; Low-power electronics; Surface energy; Damaging; Pattern generator; Nanoparticle; Self-assembled layer; Heat treatment; Three dimensional model; Microelectronic fabrication  
 CTFR Lithographie; Procédé fabrication; Composant électronique; Echelle grande; Nanostructure; Replication; Température ambiante; Durcissement; Electronique faible puissance; Energie surface; Endommagement; Générateur forme; Nanoparticule; Couche autoassemblée; Traitement thermique; Modèle 3 dimensions; Fabrication microélectronique  
 CTES Litografía; Procedimiento fabricación; Componente electrónico; Escala grande; Nanoestructura; Replicación; Temperatura ambiente; Endurecimiento; Energía superficie; Deterioración; Generador forma; Nanopartícula; Capa autoensamblada; Tratamiento térmico; Modelo 3 dimensiones; Fabricación microeléctrica  
 L86 ANSWER 57 OF 66 PASCAL COPYRIGHT 2011 INIST-CNRS. ALL RIGHTS RESERVED. on STN  
 ACCESSION NUMBER: 2005-0292092 PASCAL Full-text  
 COPYRIGHT NOTICE: Copyright .COPYRG. 2005 INIST-CNRS. All rights reserved.  
 TITLE (IN ENGLISH): Preparation of silica-on-titania patterns with a wettability contrast  
 AUTHOR: KANTA A.; SEDEV R.; RALSTON J.  
 CORPORATE SOURCE: Ian Wark Research Institute, University of South Australia, Mawson Lakes Campus, Adelaide, SA 5095, Australia  
 SOURCE: Langmuir, {2005}, 21(13), 5790-5794, 23 refs.  
 ISSN: 0743-7463 CODEN: LANGD5  
 DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic  
 COUNTRY: United States  
 LANGUAGE: English  
 AVAILABILITY: INIST-20642, 354000138134810250  
 AN 2005-0292092 PASCAL Full-text  
 CP Copyright .COPYRGT. 2005 INIST-CNRS. All rights reserved.  
 AB The preparation of patterned inorganic surfaces consisting of silica (SiO.sub.2) and titania (TiO.sub.2) is described. The approach is based on a combination of standard photolithography and plasma-enhanced chemical vapor deposition. Silicon wafers coated with a titania layer (40 nm) were patterned by use of a positive photoresist and then a thin silica layer (10-40 nm) was plasma-deposited. The photoresist was removed by decomposition at 800 °C. The inorganic patterned surfaces possessed excellent high-temperature resistance. Since the silica patches were effectively dehydroxylated during the thermal treatment, the patterns consisted of moderately hydrophobic (silica) and hydrophilic (titania) domains with a significant wettability contrast (40° for water). The surface was further hydrophobized with a self-assembled monolayer of fluoroalkylsilane (FAS) and exposed to UV light. The FAS layer was locally oxidized on the TiO.sub.2 patches and the wettability contrast was maximized to 120° (the highest possible value on smooth surfaces).  
 CP Copyright .COPYRGT. 2005 INIST-CNRS. All rights reserved.  
 CC 001C011; Chemistry; General chemistry, Physical chemistry; Surface physical chemistry  
 CCFR 001C011; Chimie; Chimie generale, Chimie physique; Physicochimie de surface  
 CCES 001C011; Quimica; Quimica general, Fisicoquimica; Fisicoquimica de superficie  
 CT Preparation; Silica; Titanium oxide; Wettability; Plasma; Chemical vapor deposition; Silicon; Patterning; Decomposition; High temperature; Resistance; Hydrophobicity; Water; Self assembly; Monolayer; Smooth surface  
 CTFR Preparation; Silice; Titane oxyde; Mouillabilite; Plasma; Depot chimique phase vapeur; Silicium; Formation motif; Decomposition; Haute temperature; Resistance; Hydrophobicite; Eau; Autoassemblage; Couche monomoleculaire; Surface lisse  
 CTES Preparacion; Silice; Titanio oxido; Remojabilidad; Plasma; Deposito quimico fase vapor; Silicio; Formacion motivo; Descomposicion; Alta temperatura; Resistencia; Hidrofobicidad; Agua; Autoensamble; Capa monomolecular; Superficie lisa  
 BT Transition element compounds  
 BTFR Metal transition compose  
 L86 ANSWER 58 OF 66 PASCAL COPYRIGHT 2011 INIST-CNRS. ALL RIGHTS RESERVED. on STN  
 ACCESSION NUMBER: 2006-0004640 PASCAL Full-text  
 COPYRIGHT NOTICE: Copyright .COPYRGT. 2006 INIST-CNRS. All rights reserved.  
 TITLE (IN ENGLISH): Formation of self assembled monolayer (SAM) on metal surfaces for high performance anisotropically conductive adhesives  
 9th international symposium on advanced packaging materials : processes, properties and interfaces. March 24-26, 2004, Atlanta, Georgia USA  
 AUTHOR: YI LI; MOON Kyoung-Sik; WONG C. P.  
 CORPORATE SOURCE: School of Materials Science and Engineering and Packaging Research Center, Georgia Institute of Technology, Atlanta, GA 30332, United States  
 SOURCE: {2004}, 139-144, 18 refs.  
 Conference: 9 International symposium on advanced

packaging materials, Atlanta GA (United States),  
24 Mar 2004  
Published by: IEEE, Piscataway NJ  
ISBN: 0-7803-8436-9

DOCUMENT TYPE: Conference  
BIBLIOGRAPHIC LEVEL: Analytic  
COUNTRY: United States  
LANGUAGE: English  
AVAILABILITY: INIST-Y 38574, 354000124517700260

AN 2006-0004640 PASCAL Full-text

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AB To improve the electrical property of the anisotropically conductive adhesive (ACA) joints, self-assembled monolayer (SAM) compounds are introduced into the interface between the metal filler and the substrate bond pad. The formation of the SAM on various metal surfaces and their thermal stability are investigated by measuring the contact angles of SAM compounds with a hydrophilic or hydrophobic tail groups such as octadecanethiol (ODT) and mercaptoacetic acid (MAA) on Au, Cu, Sn and SnPb surfaces. Goniometer testing and grazing FTIR spectra demonstrate that SAM molecules are readily adhered to metal surfaces. The concentration of SAM solutions, immersing time, thermal treatment temperature and time were varied as experimental parameters. ODT adhered to copper surface the best, while gold was the best metal for MAA. The ODT SAM coatings on the metal surfaces used were thermally stable for 2 hrs at room temperature and 100 °C. However, they were slightly degraded at 150 °C. The MAA SAM coatings on the metal surfaces are unstable at 150 °C and are degraded after 2 hrs at 150 °C. The dithiol SAM compound (1,4-Benzenedithiol) was applied in ACA joints, where conductive fillers (polymer particles coated with gold) and Ni/Au bond pad surfaces were treated with the dithiol SAM compound. Epoxy resins with two different curing temperatures were used as polymer matrices of the ACA formulations, respectively. From the current-voltage (I-V) measurement, it was found that the SAM treated ACA joints showed a lower resistance at the same applied current than non-treated joints.

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CC 001D03F06A; Applied sciences; Electronics; Microelectronics, Solid state devices

001D03C; Applied sciences; Electronics; Materials science

CCFR 001D03F06A; Sciences appliquees; Electronique; Microelectronique, Dispositifs a l'etat solide

001D03C; Sciences appliquees; Electronique; Science des materiaux

CCES 001D03F06A; Ciencias aplicadas; Electronica; Microelectronica, Dispositivos en el estado solido

001D03C; Ciencias aplicadas; Electronica; Ciencia de los materiales

CT Self-assembled layer; High performance; Electrical characteristic; Adhesive joint; Filler; Interconnection; Thermal stability; Contact angle; Hydrophily; Grazing incidence; Heat treatment; Metal coating; Room temperature; Hardening; Voltage current curve; Polymer; Coated material; Epoxy resin; Integrated circuit; Electronic packaging; Properties of materials

CTFR Couche autoassemblee; Haute performance; Caracteristique electrique; Assemblage colle; Matiere charge; Interconnexion; Stabilite thermique; Angle contact; Hydrophilie; Incidence rasante; Traitement thermique; Revetement metallique; Temperature ambiante; Durcissement; Caracteristique courant tension; Polymere; Matériau revetu; Epoxyste resine; Circuit integre; Packaging electronique; Propriete materiau

CTES Capa autoensamblada; Alto rendimiento; Caracteristica electrica; Ensambladura pegada; Materia carga; Interconexion; Estabilidad termica; Angulo contacto; Hidrofilia; Incidencia rasante; Tratamiento



termico; Revestimiento metalico; Temperatura ambiente;  
 Endurecimiento; Característica corriente tension; Polímero; Material  
 revestido; Epoxido resina; Circuito integrado; Packaging  
 electrónico; Propiedad material

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ACCESSION NUMBER: 2006-0264352 PASCAL Full-text

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 reserved.

TITLE (IN ENGLISH): Electrical property of anisotropically conductive  
 adhesive joints modified by self-assembled  
 monolayer (SAM)

54th electronic components & technology conference  
 : Las Vegas NV, 1-4 June 2004

AUTHOR: YI LI; MOON Kyoung-Sik; WONG C. P.

CORPORATE SOURCE: School of Materials Science and Engineering and  
 Packaging Research Center Georgia Institute of  
 Technology, Atlanta, GA 30332, United States  
 Electronic Components, Assemblies & Materials  
 Association, United States (org-cong.); Electronic  
 Industries Alliance, United States (org-cong.);  
 IEEE Components, Packaging & Manufacturing  
 Technology Society, United States (org-cong.)  
 SOURCE: Proceedings - Electronic Components Conference,  
 (2004), Vol 2, 1968-1974, 18 refs.

Conference: 54 ECTC : electronic components &  
 technology conference, Las Vegas NV (United  
 States), 1 Jun 2004

ISSN: 0569-5503

ISBN: 0-7803-8365-6

DOCUMENT TYPE: Journal; Conference

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United States

LANGUAGE: English

AVAILABILITY: INIST-Y 38821, 354000138716043150

AN 2006-0264352 PASCAL Full-text

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AB To improve the electrical property of the anisotropically conductive adhesive  
 (ACA) joints, self-assembled monolayer (SAM) compounds are introduced into  
 the interface between the metal filler and the substrate bond pad. The  
 formation of the SAM on various metal surfaces and their thermal stability  
 are investigated by measuring the contact angles of SAM compounds with a  
 hydrophilic or hydrophobic tail groups such as 4, 4'-thiodibenzeneethiol  
 (MPS), octadecanethiol (ODT) and mercaptoacetic acid (MAA) on Au, Cu, Sn and  
 SnPb surfaces. Goniometer testing and grazing FTIR spectra demonstrate that  
 SAM molecules are readily adhered to metal surfaces. The concentration of SAM  
 solutions, immersing time, thermal treatment temperature and time were varied  
 as experimental parameters. ODT adhered to copper surface the best, while  
 gold was the best metal for MAA. MPS gave mixed results because it could  
 align in various configurations on the metal surfaces due to its flexible  
 molecular structure and the orientation on this molecule. The ODT and MPS SAM  
 coatings on the metal surfaces used were thermally stable for 2 hrs at room  
 temperature and 100 °C. However, they were slightly degraded at 150 °C. The  
 MAA SAM coatings on four metal surfaces are unstable at 150 °C and most of  
 these coatings are degraded after 2 hrs. The dithiol SAM compound (1,4-  
 Benzenedithiol) was applied in ACA joints, where conductive fillers (polymer  
 particles coated with gold) and Ni/Au bond pad surfaces were treated with the  
 dithiol SAM compound. Epoxy resins with two different curing temperatures  
 were used as polymer matrices of the ACA formulations, respectively. From the

current-voltage (IV) measurement, it was found that the SAM treated ACA joints showed a lower resistance at the same applied current than non-treated joints.

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 CC 001D03F18; Applied sciences; Electronics; Microelectronics, Solid state devices  
 001D03F06A; Applied sciences; Electronics; Microelectronics, Solid state devices  
 CCFR 001D03F18; Sciences appliquees; Electronique; Microelectronique, Dispositifs a l'etat solide  
 001D03F06A; Sciences appliquees; Electronique; Microelectronique, Dispositifs a l'etat solide  
 CCES 001D03F18; Ciencias aplicadas; Electronica; Microelectronica, Dispositivos en el estado solido  
 001D03F06A; Ciencias aplicadas; Electronica; Microelectronica, Dispositivos en el estado solido  
 CT Electrical characteristic; Adhesive joint; Self-assembled layer; Filler; Interconnection; Thermal stability; Contact angle; Hydrophily; Grazing incidence; Heat treatment; Molecular electronics; Metal coating; Room temperature; Hardening; Voltage current curve; Flexible structure; Polymer; Coated material; Epoxy resin; Integrated circuit; Nanoelectronics  
 CTFR Caracteristique electrique; Assemblage colle; Couche autoassemblee; Matiere charge; Interconnexion; Stabilite thermique; Angle contact; Hydrophilie; Incidence rasante; Traitement thermique; Electronique moleculaire; Revetement metallique; Temperature ambiante; Durcissement; Caracteristique courant tension; Structure flexible; Polymere; Matériau revetu; Epoxyde resine; Circuit integre; Nanoelectronique  
 CTES Caracteristica electrica; Ensambladura pegada; Capa autoensamblada; Materia carga; Interconexion; Estabilidad termica; Angulo contacto; Hidrofilia; Incidencia rasante; Tratamiento termico; Electronica molecular; Revestimiento metalico; Temperatura ambiente; Endurecimiento; Caracteristica corriente tension; Estructura flexible; Polimero; Material revestido; Epoxido resina; Circuito integrado; Nanoelectronica

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ACCESSION NUMBER: 2004-0069152 PASCAL Full-text  
 COPYRIGHT NOTICE: Copyright .COPYRG. 2004 INIST-CNRS. All rights reserved.  
 TITLE (IN ENGLISH): Surface treatment of clay minerals: thermal stability, basal-plane spacing and surface coverage  
 AUTHOR: OSMAN Maged A.; PLOETZE Michael; SUTER Ulrich W.  
 CORPORATE SOURCE: Department of Materials, Institute of Polymers, ETH, 8092 Zurich, Switzerland; Laboratory of Clay Mineralogy, IGT, ETH, 8092 Zurich, Switzerland  
 SOURCE: Journal of material chemistry, {2003}, 13(9), 2359-2366, 53 refs.  
 ISSN: 0959-9428  
 DOCUMENT TYPE: Journal  
 BIBLIOGRAPHIC LEVEL: Analytic  
 COUNTRY: United Kingdom  
 LANGUAGE: English  
 AVAILABILITY: INIST-22603, 354000114363500520  
 AN 2004-0069152 PASCAL Full-text  
 CP Copyright .COPYRG. 2004 INIST-CNRS. All rights reserved.

- AB Oxidative thermal degradation of organically modified montmorillonite (OM) and muscovite was studied using conventional and high-resolution TGA. Analysis of the ultra thin alkylammonium film covering the mineral surface revealed a correlation between thermal stability and extent of cation exchange. In the final stage of the exchange, some alkylammonium molecules are intercalated between the ionically bonded ones in a tail-to-tail arrangement leading to a local bilayer. This local bilayer as well as the non-reacted ammonium salt molecules decompose at lower temperatures than the self-assembled monolayer (SAM) and decrease the thermal stability of the OM, i.e. the quality of SAMs can be monitored by Hi-Res TGA. Quantitative analysis of the organic monolayer was not always possible by TGA due to incomplete oxidation and superimposition of different mass-loss events. However, the mass-loss across the first degradation event gave a good estimate of the surface coverage. In the case of montmorillonite, quantitative analysis was possible by taking the mass-loss due to physisorbed water and to dehydroxylation of the mineral into consideration. Both mass-loss and basal-plane spacing increased with augmented cation exchange, reaching a saturation value at *sim.* 100% of the CEC. The thermal stability of the organic monolayer depends on its chemical structure and purity as well as on the nature of the substrate. In general, dialkylammonium SAMs are more stable than the monoalkyl derivatives. Neither the decomposition onset temperature nor the temperature of maximum mass-loss rate is useful as an index for the stability of alkylammonium SAMs. The time needed for an isothermal mass-loss equal to 5% of that occurring across the first decomposition event was used as an index to compare the stability of different monolayers. The thermal stability of pure alkylammonium SAMs on montmorillonite allows compounding with many commercially available polymers.
- CP Copyright .COPYRIGHT. 2004 INIST-CNRS. All rights reserved.
- CC 001E01M01; Universe sciences; Earth sciences; Internal geophysics  
001B80A65; Physics; Materials science  
225B01
- CCFR 001E01M01; Sciences de l'univers; Sciences de la Terre; Geophysique interne  
001B80A65; Physique; Science des matériaux  
225B01
- CCES 001E01M01; Ciencias del universo; Ciencias de la Tierra; Geofísica interna  
001B80A65; Física; Ciencia de los materiales  
225B01
- PAC 9160K; 8165M
- CT Experimental study; Surface treatment; Surface area; Thermal stability; Overlay; Heat treatment; Oxidation; Thermogravimetry; Exchange interaction; Clay; Montmorillonite; Muscovite; Bilayers; Ultrathin films; Thin film
- CTFR Etude expérimentale; Traitement surface; Aire superficielle; Stabilité thermique; Recouvrement; Traitement thermique; Oxydation; Thermogravimétrie; Interaction échange; Argile; Montmorillonite; Muscovite; Bicouche; Couche ultramince; Couche mince; 9160K; 8165M
- CTES Estudio experimental; Tratamiento superficial; Área superficial; Estabilidad térmica; Recubrimiento; Tratamiento térmico; Oxidación; Termogravimetría; Interacción intercambio; Arcilla; Montmorillonita; Muscovita; Capa fina
- BT Inorganic compound
- BTFR Composé minéral
- BTES Compuesto inorgánico

L86 ANSWER 61 OF 66 PASCAL COPYRIGHT 2011 INIST-CNRS. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2002-0575923 PASCAL Full-text  
TITLE (IN ENGLISH): Self-assembled monolayers of

6-phenyl-n-hexanethiol and  
 6-(p-vinylphenyl)-n-hexanethiol on Au(111): An  
 investigation of structure, stability, and  
 reactivity

AUTHOR: DUAN L.; GARRETT S. J.  
 CORPORATE SOURCE: Department of Chemistry Michigan State University,  
 East Lansing, MI 48824, United States  
 SOURCE: Langmuir, {2001}, 17(10), 2986-2994, 45  
 refs.  
 ISSN: 0743-7463

DOCUMENT TYPE: Journal  
 BIBLIOGRAPHIC LEVEL: Analytic  
 COUNTRY: United States  
 LANGUAGE: English  
 AVAILABILITY: INIST-20642

AN 2002-0575923 PASCAL Full-text  
 AB Self-assembled monolayers (SAMs) of 6-phenyl-n-hexanethiol (PHT) and 6-(p-vinylphenyl)-n-hexanethiol (VHT) on Au(111) have been investigated by reflection-absorption infrared spectroscopy (RAIRS), ellipsometry, and scanning tunneling microscopy (STM). Both molecules chemisorbed as thiolates. The packing order and structural changes of the PHT monolayer were investigated at room temperature and following annealing in ultrahigh vacuum. Three different stripe phases ( $\delta$ ,  $\chi$ SPRM, and  $\beta$ ), characterized by molecular axes oriented almost parallel to the surface plane, were observed by STM. In contrast, the VHT monolayer had a structure in which the average molecular tilt angle was close to the surface normal. Polymerization of the VHT SAM, as followed by RAIRS, was achieved by either UV-light irradiation or thermal treatment. Ultraviolet irradiation produced longer chain polymers with a maximum of  $\sim$ similar to  $\langle$ pillcrow $\rangle$ 70% conversion, whereas annealing produced shorter chain polymers with CH<sub>3</sub> as the end group. The UV-light polymerized film was more robust than the thermally polymerized film.

CC 001C01; Chemistry; General chemistry, Physical chemistry  
 001B70; Physics; Condensed matter physics, Materials science  
 001D08A03; Applied sciences; Chemistry; Chemical industry  
 001D11A; Applied sciences; Metals, Metallurgy, Materials science  
 001D09; Applied sciences; Physicochemistry of polymers,  
 Macromolecular chemistry, Materials science  
 001D10A06; Applied sciences; Polymer technology, Materials science  
 240; Metals, Metallurgy, Materials science

CCFR 001C01; Chimie; Chimie generale, Chimie physique  
 001B70; Physique; Physique de l'etat condense, Science des materiaux  
 001D08A03; Sciences appliquees; Chimie; Industrie chimique  
 001D11A; Sciences appliquees; Metaux, Metallurgie, Science des  
 materiaux  
 001D09; Sciences appliquees; Physicochimie des polymeres, Chimie  
 macromoleculaire, Science des materiaux  
 001D10A06; Sciences appliquees; Technologie des polymeres, Science  
 des materiaux  
 240; Metaux, Metallurgie, Science des materiaux

CCES 001C01; Quimica; Quimica general, Fisicoquimica  
 001B70; Fisica; Fisica del estado condensado, Ciencia de los  
 materiales  
 001D08A03; Ciencias aplicadas; Quimica; Industria quimica  
 001D11A; Ciencias aplicadas; Metales, Metalurgia, Ciencia de los  
 materiales  
 001D09; Ciencias aplicadas; Fisicoquimica de los polimeros, Quimica  
 macromolecular, Ciencia de los materiales  
 001D10A06; Ciencias aplicadas; Tecnologia de los polimeros, Ciencia  
 de los materiales  
 240; Metales, Metalurgia, Ciencia de los materiales

CT Chemical reactivity; Theory; Surface structure; Aromatic compounds; Gold; Polymerization; Plastic films; Light reflection; Light absorption; Ellipsometry; Chemisorption; Thermal effects; Annealing; Vacuum applications; Self assembly; Experiments

CTFR Theorie; Structure surface; Compose aromatique; Or; Polymérisation; Film(matiere plastique); Reflexion optique; Absorption lumiere; Ellipsometrie; Chimisorption; Effet thermique; Recuit; Application vide; Autoassemblage; Experience

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ACCESSION NUMBER: 2000-0528733 PASCAL Full-text

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TITLE (IN ENGLISH): Step and flash imprint lithography: Template surface treatment and defect analysis

AUTHOR: BAILEY T.; CHOI B. J.; COLBURN M.; MEISSL M.; SHAYA S.; EKERDT J. G.; SREENIVASAN S. V.; WILLSON C. G.

CORPORATE SOURCE: Texas Materials Institute, The University of Texas at Austin, Austin, Texas 78727

SOURCE: Journal of vacuum science & technology. B. Microelectronics and nanometer structures. Processing, measurement and phenomena, (2000-11), 18(6), 3572-3577  
ISSN: 1071-1023 CODEN: JVTBD9  
Journal; Conference

DOCUMENT TYPE: Journal; Conference

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: United States

LANGUAGE: English

AVAILABILITY: INIST-11992 B

AN 2000-0528733 PASCAL Full-text

CP Copyright .COPYRGT. 2000 American Institute of Physics. All rights reserved.

AB We have finished the construction of an automated tool for step and flash imprint lithography. The tool was constructed to allow defect studies by making multiple imprints on a 200 mm wafer. The imprint templates for this study were treated with a low surface energy, self-assembled monolayer to ensure selective release at the template-etch barrier interface. This surface treatment is very durable and survives repeated imprints and multiple aggressive physical and chemical cleanings. The imprint and release forces were measured for a number of successive imprints, and did not change significantly. The process appears to be self-cleaning. Contamination on the template is entrained in the polymerizing liquid, and the number of defects is reduced with repeated imprints. .COPYRGT. 2000 American Vacuum Society.

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CC 001D03F17; Applied sciences; Electronics; Microelectronics, Solid state devices; Microtechnology, Materials science  
001B80A65; Physics; Materials science

CCFR 001D03F17; Sciences appliquees; Electronique; Microelectronique, Dispositifs a l'etat solide; Microtechnologie, Science des materiaux  
001B80A65; Physique; Science des materiaux

CCES 001D03F17; Ciencias aplicadas; Electronica; Microelectronica, Dispositivos en el estado solido; Microtecnologia, Ciencia de los materiales  
001B80A65; Fisica; Ciencia de los materiales

PAC 8540H; 8165C

CT Instrumentation; Measuring methods; Lithography; Surface treatments;

Surface cleaning; Surface contamination  
 CTRF 8540H; 8165C; Appareillage; Methode mesure; Lithographie; Traitement  
 surface; Nettoyage surface; Contamination superficielle

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ACCESSION NUMBER: 1997-0408481 PASCAL Full-text  
 COPYRIGHT NOTICE: Copyright .COPYRGT. 1997 INIST-CNRS. All rights  
 reserved.

TITLE (IN ENGLISH): Heat-induced phase separation of self-assembled  
 monolayers of a fluorocarbon-hydrocarbon  
 asymmetric disulfide on a Au(111) surface

AUTHOR: ISHIDA T.; YAMAMOTO S.-I.; MOTOMATSU M.; MIZUTANI  
 W.; TOKUMOTO H.; HOKARI H.; AZEHARA H.; FUJIHARA  
 M.; KOJIMA I.

CORPORATE SOURCE: JRCAT-National Institute for Advanced  
 Interdisciplinary Research (NAIR), 1-1-4 Higashi,  
 Tsukuba, Ibaraki 305, Japan; Joint Research Center  
 for Atom Technology (JRCAT), Angstrom Technology  
 Partnership (ATP), 1-1-4 Higashi, Tsukuba, Ibaraki  
 305, Japan; Department of Biomolecular  
 Engineering, Faculty of Bioscience and  
 Biotechnology, Tokyo Institute of Technology, 4259  
 Nagatsuta, Midori-ku, Yokohama 226, Japan;  
 National Institute of Materials and Chemical  
 Research (NIMC), 1-1 Higashi, Tsukuba, Ibaraki  
 305, Japan

SOURCE: Japanese journal of applied physics,  
 (1997), 36(6B, p.1), 3909-3912, 21 refs.  
 Conference: 4 International Colloquium on Scanning  
 Tunneling Microscopy, (Japan), 12 Dec 1996  
 ISSN: 0021-4922 CODEN: JJAPAS

DOCUMENT TYPE: Journal; Conference

BIBLIOGRAPHIC LEVEL: Analytic

COUNTRY: Japan

LANGUAGE: English

AVAILABILITY: INIST-9959, 35400067658130260

AN 1997-0408481 PASCAL Full-text

CP Copyright .COPYRGT. 1997 INIST-CNRS. All rights reserved.

AB Heat-induced phase separation of fluorocarbon-hydrocarbon self-assembled  
 monolayers (SAMs) on a Au(111) surface was studied by scanning tunneling  
 microscopy (STM), atomic force microscopy (AFM) and friction force microscopy  
 (FFM). Phase-separated domains were depressed by 0.3 nm with a lateral  
 dimension of 20-200 nm. The friction forces on the higher parts were smaller  
 than those on the lower domains. The higher parts were assigned to the  
 hydrocarbon chains, because the fluorocarbon chains should have a larger  
 friction force acting on them than the hydrocarbon chains against the silicon  
 nitride tip. Phase separation suggests cleaving of the S-S bonds of  
 disulfides in the SAMs. XPS measurements clearly showed an increase in the  
 isolated Au-S binding species, suggesting the existence of the thiolate  
 (monomer).

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CC 001B60H55J; Physics; Condensed matter physics, Materials science;  
 Surfaces, Interfaces  
 001B60H60; Physics; Condensed matter physics, Materials science;  
 Surfaces, Interfaces

CCFR 001B60H55J; Physique; Physique de l'etat condense, Science des  
 materiaux; Surfaces, Interfaces  
 001B60H60; Physique; Physique de l'etat condense, Science des  
 materiaux; Surfaces, Interfaces

CCES 001B60H55J; Fisica; Fisica del estado condensado, Ciencia de los materiales; Superficies, Interfases  
 001B60H60; Fisica; Fisica del estado condensado, Ciencia de los materiales; Superficies, Interfases  
 PAC 6855J; 6860  
 CT Experimental study; Monolayers; Self assembly; Phase separation; Saturated aliphatic compound; Disulfides; STM; Dimers; Heat treatments; Atomic force microscopy; Friction; Photoelectron spectroscopy; X radiation; Chemical bonds  
 CTFR Etude experimentale; Couche monomoleculaire; Autoassemblage; Separation phase; Compose aliphatique sature; Disulfure organique; STM; Dimere; Traitement thermique; Microscopie force atomique; Frottement; Spectrometrie photoelectron; Rayon X; Liaison chimique; 6855J; 6860; Substrat Au; Disulfure(alkyl trifluoroalkyl)  
 CTES Autoensamble; Compuesto alifatico saturado  
 BT Organic compounds; Fluorine Organic compounds  
 BTFR Compose organique; Fluor Compose organique

L86 ANSWER 64 OF 66 PASCAL COPYRIGHT 2011 INIST-CNRS. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 1996-0473996 PASCAL Full-text  
 COPYRIGHT NOTICE: Copyright .COPYRGT. 1996 INIST-CNRS. All rights reserved.  
 TITLE (IN ENGLISH): Deposition of oxide thin films on silicon using organic self-assembled monolayers  
 Integrated optics and microstructures III : San Jose CA, 29 January 1996  
 AUTHOR: DE GUIRE M. R.; SHIN H.; COLLINS R.; AGARWAL M.; SUKENIK C. N.; HEUER A. H.  
 TABIB-AZAR Massood (ed.)  
 CORPORATE SOURCE: Case Western Reserve University, Department of Materials Science and Engineering, Cleveland, Ohio 44106, United States; Case Western Reserve University, Department of Chemistry, Cleveland, Ohio 44106, United States  
 International Society for Optical Engineering, Bellingham WA, United States (patr.)  
 SOURCE: SPIE proceedings series, (1996), 2686, 88-99, 35 refs.  
 Conference: 3 Integrated optics and microstructures. Conference, San Jose CA (United States), 29 Jan 1996  
 ISSN: 1017-2653  
 DOCUMENT TYPE: Journal; Conference  
 BIBLIOGRAPHIC LEVEL: Analytic  
 COUNTRY: United States  
 LANGUAGE: English  
 AVAILABILITY: INIST-21760, 354000060668240100

AN 1996-0473996 PASCAL Full-text  
 CP Copyright .COPYRGT. 1996 INIST-CNRS. All rights reserved.  
 AB Crystalline oxide thin films have been synthesized at low temperatures from aqueous liquid solutions. A key element of the approach is the use of organic self-assembled monolayers (SAMs) on the substrate to promote the growth of adherent inorganic films. A SAM is a close-packed, highly ordered array of long-chain hydrocarbon molecules, anchored to the substrate by covalent bonds. The terminating functional group on the SAM surface is chosen so as to initiate and help sustain the formation of the oxide film when the substrate is immersed in the oxide precursor solution. Synthesis, microstructural characterization, and properties of TiO<sub>2</sub>.sub.2, ZrO<sub>2</sub>.sub.2, SiO<sub>2</sub>.sub.2, and Y<sub>2</sub>O<sub>3</sub>.sub.20 films are surveyed. Crystalline films were formed either

directly from solution, or through subsequent heat treatments at temperatures that in most cases were lower than typical sol-gel or vapor phase deposition processes. All depositions were from aqueous solutions onto single-crystal (100) silicon. The ability to produce patterned films on a micron scale has been demonstrated, taking advantage of the selective deposition characteristics towards different surface functional groups of the SAM. The role of the SAM in oxide film formation is discussed.

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CC 001D03F17; Applied sciences; Electronics; Semiconductor electronics, Microelectronics, Optoelectronics, Solid state devices; Materials science

CCFR 001D03F17; Sciences appliquees; Electronique; Electronique des semiconducteurs, Microelectronique, Optoelectronique, Dispositifs a l'etat solide; Science des materiaux

CCES 001D03F17; Ciencias aplicadas; Electronica; Electronica de los semiconductores, Microelectronica, Optoelectronica, Dispositivos en el estado solido; Ciencia de los materiales

L86 ANSWER 65 OF 66 COMPENDEX COPYRIGHT 2011 EEI on STN

ACCESSION NUMBER: 2006-3010027835 COMPENDEX Full-text

TITLE: Substrate effects in poly(ethylene glycol) self-assembled monolayers on granular and flame-annealed gold

AUTHOR(S): Rundqvist Jonas; Haviland David B.; Hoh Jan H.  
CORPORATE SOURCE: Rundqvist Jonas; Haviland David B. (Nanostructure Physics, AlbaNova University Center, Royal Institute of Technology, Roslagsvagen 30 B, SE-106 91 Stockholm (SE)); Hoh Jan H. (Department of Physiology, Johns Hopkins School of Medicine, 725 North Wolfe Street, Baltimore, MD 21205 (US))  
EMAIL: haviland@kth.se

SOURCE: Journal of Colloid and Interface Science (1 Sep 2006) Volume 301, Number 1, pp. 337-341, 29 refs.

CODEN: JCISA5 ISSN: 0021-9797

DOI: 10.1016/j.jcis.2006.05.012

Published by: Academic Press Inc.

PUBL. ITEM IDENTIFIER: S0021979706004085

COUNTRY OF PUBLICATION: United States

DOCUMENT TYPE: Journal; Article; Experimental

LANGUAGE: English

SUMMARY LANGUAGE: English

ENTRY DATE: Entered STN: 4 Jan 2009

Last updated on STN: 4 Jan 2009

AN 2006-3010027835 COMPENDEX Full-text

AB Poly(ethylene glycol) (PEG) self-assembled monolayers (SAMs) are surface coatings that efficiently prevent nonspecific adhesion of biomolecules to surfaces. Here, we report on SAM formation of the PEG thiol CH<sub>3</sub>O(CH<sub>2</sub>CH<sub>2</sub>O)<sub>17</sub>NHCO(CH<sub>2</sub>)<sub>2</sub>SH (PEG17) on three types of Au films: thermally evaporated granular Au and two types of Au films from hydrogen flame annealing of granular Au, Au(111), and Au silicide. The different Au surfaces clearly affects the morphology and mechanical properties of the PEG17 SAM, which is shown by AFM topographs and force distance curves. The two types of SAMs found on flame-annealed Au were denoted "soft" and "hard" due to their difference in stiffness and resistance to scratching by the AFM probe. With the aim of nanometer scale patterning of the PEG17, the SAMs were exposed by low energy (1 kV) electron beam lithography (EBL). Two distinctly different types of behaviour were observed on the different types of SAM; the soft PEG17 SAM was destroyed in a self-developing process while



material deposition was dominant for the hard PEG17 SAM. .COPYRGT. 2006 Elsevier Inc. All rights reserved.

AN 2006-3010027835 COMPENDEX Full-text  
 CC 537.1 Heat Treatment Processes; 547.1 Precious Metals;  
 714.2 Semiconductor Devices and Integrated Circuits; 741.3 Optical  
 Devices and Systems; 813.2 Coating Materials; 815.1.1 Organic  
 Polymers

CT \*Self assembly; Annealing; Atomic force microscopy; Coatings;  
 Electron beam lithography; Gold; Polyethylene glycols

ST Flame-annealing; Nanometer scale patterning; Silicide;  
 Surface effects

ET C\*H\*N\*O; O(CH2CH2O)17NHCO(CH; O cp; cp; C cp; H cp; N cp; Au

L86 ANSWER 66 OF 66 COMPENDEX COPYRIGHT 2011 EEI on STN  
 ACCESSION NUMBER: 2005-169044170 COMPENDEX Full-text  
 TITLE: Structure and stability of self-assembled  
 monolayers for octadecanethiol absorbed onto flame  
 annealing gold substrate and its potential  
 application to microfluidics

AUTHOR(S): Han Jingmin; Wang Xiaodong; Kwok Daniel Y.  
 CORPORATE SOURCE: Han Jingmin; Wang Xiaodong; Kwok Daniel Y.  
 (Nanoscale Technol. and Eng. Lab., Department of  
 Mechanical Engineering, University of Alberta,  
 Edmonton, Alta. T6G 2G8 (CA)); Kwok Daniel Y.  
 (Department of Mechanical Engineering, University  
 of Alberta, 4-9 Mechanical Engineering, Edmonton,  
 Alta. T6G 2G8 (CA))  
 EMAIL: daniel.y.kwok@ualberta.ca

SOURCE: Proceedings - 2004 International Conference on  
 MEMS, NANO and Smart Systems, ICMENS 2004  
 (2004), pp. 22-25, 711 p., 14 refs.  
 Editor(s): Badawy W.; Moussa W.  
 ISBN: 0769521894; 9780769521893  
 Published by: IEEE Computer Society  
 Conference: Proceedings - 2004 International  
 Conference on MEMS, NANO and Smart Systems, ICMENS 2004 Banff, Alta.  
 (CA), 25 Aug 2004-27 Aug 2004  
 Organizer(s): IEEE Computer Society; IEEE CAS  
 TC-BioCAs; IEEE Circuit and Systems Society  
 Sponsor(s): University of Calgary

COUNTRY OF PUBLICATION: United States  
 DOCUMENT TYPE: Conference; (Conference Paper); Theoretical;  
 Experimental

LANGUAGE: English  
 SUMMARY LANGUAGE: English  
 ENTRY DATE: Entered STN: 4 Jan 2009  
 Last updated on STN: 4 Jan 2009

AN 2005-169044170 COMPENDEX Full-text  
 AB Self-Assembled Monolayers (SAMs) derived from the adsorption of organothiol  
 onto gold have been extensively investigated for studying their potential  
 applications to Micro- and Nanofluidics system. However, nearly all  
 applications rely on SAMs' stability. Because high energy gold is easy to  
 absorb organic contaminant from ambient, totally wetting gold surface can  
 not be obtained in the laboratory environment. Flame annealing the gold  
 surface before adsorption not only remove the organic contaminant, it also  
 shaves the "rolling hills" on the evaporated gold surface. SAMs formed on  
 annealed gold surface have better structure and stability than those formed  
 on evaporated gold. These properties will be helpful for potential  
 application on microfluidics system as a surface modification. Ex situ

spectroscopic ellipsometry, and Fourier Transform Infrared (FTIR) were used to characterize the structure of SAMs. .COPYRGT. 2004 IEEE.

AN 2005-169044170 COMPENDEX Full-text  
 CC 931.3 Atomic and Molecular Physics; 714.2 Semiconductor Devices and Integrated Circuits; 712.1 Semiconducting Materials; 632.1 Hydraulics; 604.2 Machining Operations; 547.1 Precious Metals; 537.1 Heat Treatment Processes; 521.4 Flame Research; 461 Bioengineering  
 CT \*Gold; Annealing; Flammability; Fluidics; Molecules; Monolayers; Self assembly; Substrates; Surfaces  
 ST Microfluidics; Nanofluidics; Organic contaminants; Rolling hills

=> d his nofile

(FILE 'HOME' ENTERED AT 15:13:17 ON 12 JUL 2011)

FILE 'HCAPLUS' ENTERED AT 15:13:56 ON 12 JUL 2011

L1 1 SEA SPE=ON ABB=ON PLU=ON US20070140901/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 15:14:20 ON 12 JUL 2011

L2 16 SEA SPE=ON ABB=ON PLU=ON (12597-69-2/BI OR 1303-00-0/BI  
OR 22398-80-7/BI OR 298704-23-1/BI OR 7429-90-5/BI OR  
7439-89-6/BI OR 7439-96-5/BI OR 7439-98-7/BI OR 7440-06-4/B  
I OR 7440-22-4/BI OR 7440-32-6/BI OR 7440-33-7/BI OR  
7440-47-3/BI OR 7440-57-5/BI OR 7440-62-2/BI OR 7440-67-7/B  
I)

L3 14 SEA SPE=ON ABB=ON PLU=ON L2 AND M/ELS

FILE 'HCAPLUS' ENTERED AT 15:14:59 ON 12 JUL 2011

L4 2135970 SEA SPE=ON ABB=ON PLU=ON L3  
E SELF-ASSEMBLED MONOLAYERS/CT

L5 14733 SEA SPE=ON ABB=ON PLU=ON ("SELF-ASSEMBLED MONOLAYER"+PFT  
,NT/CT OR "SELF-ASSEMBLED MONOLAYERS"+PFT,NT/CT)

L6 8343 SEA SPE=ON ABB=ON PLU=ON L4 AND L5

L7 1 SEA SPE=ON ABB=ON PLU=ON L6 AND L1

L8 1158 SEA SPE=ON ABB=ON PLU=ON L6 AND CPS/RL

L9 12 SEA SPE=ON ABB=ON PLU=ON L8 AND ANCHOR?(5A)SURFACE?

L10 725 SEA SPE=ON ABB=ON PLU=ON L4 AND ANCHOR?(5A)SURFACE?

L11 QUE SPE=ON ABB=ON PLU=ON SELF ASSEMBLED MONOLAYER? OR  
SAM

L12 243 SEA SPE=ON ABB=ON PLU=ON L11 AND ANCHOR?(5A)SURFACE?

L13 QUE SPE=ON ABB=ON PLU=ON (THERMAL? OR TEMP? OR HEAT?) (3A  
)TREAT?

L14 155 SEA SPE=ON ABB=ON PLU=ON L5 AND ANCHOR?(5A)SURFACE?

L15 243 SEA SPE=ON ABB=ON PLU=ON L12 OR L14

L16 1 SEA SPE=ON ABB=ON PLU=ON L15 AND L13

L17 QUE SPE=ON ABB=ON PLU=ON POLYMER? OR MONOMER? OR RESIN?  
OR POLYMORPHIC? OR PLASTIC? OR THERMOPLAST? OR RUBBER?

L18 53 SEA SPE=ON ABB=ON PLU=ON L15 AND L17  
E LITHOGRAPHY/CT

L19 76819 SEA SPE=ON ABB=ON PLU=ON LITHOGRAPHY+PFT,NT/CT

L20 5 SEA SPE=ON ABB=ON PLU=ON L18 AND L19

L21 5 SEA SPE=ON ABB=ON PLU=ON L15 AND L20

L22 QUE SPE=ON ABB=ON PLU=ON PATTERN? OR DESIGN?

L23 QUE SPE=ON ABB=ON PLU=ON SUBSTRAT? OR SURFACE? OR BASE#  
OR SUBSTRUCT? OR UNDERSTRUCT? OR UNDERLAY? OR FOUNDATION?  
OR PANE? OR DISK? OR DISC# OR WAFER?

L24 40 SEA SPE=ON ABB=ON PLU=ON L15 AND L22 AND L23

L25 15 SEA SPE=ON ABB=ON PLU=ON L24 AND SURFACE?/SC,SX

L26 108 SEA SPE=ON ABB=ON PLU=ON L15 AND SURFACE?/SC,SX

L27 108 SEA SPE=ON ABB=ON PLU=ON L26 AND L23

L28 3 SEA SPE=ON ABB=ON PLU=ON L27 AND L19

L29 20 SEA SPE=ON ABB=ON PLU=ON L27 AND CPS/RL

L30 37 SEA SPE=ON ABB=ON PLU=ON L9 OR (L20 OR L21) OR L25 OR  
L28 OR L29

L31 30 SEA SPE=ON ABB=ON PLU=ON L30 AND (1840-2006)/PRY,AY,PY

L32 8 SEA SPE=ON ABB=ON PLU=ON L17 AND L31

L33 215 SEA SPE=ON ABB=ON PLU=ON (L5 OR L11) AND L13

L34 58 SEA SPE=ON ABB=ON PLU=ON L33 AND L17

L35 54 SEA SPE=ON ABB=ON PLU=ON L34 AND L23  
 L36 QUE SPE=ON ABB=ON PLU=ON (FIRST OR 1ST OR 1 ST OR  
 PRIMARY? OR ONE) (3A) STRUCTUR?  
 L37 QUE SPE=ON ABB=ON PLU=ON (SECOND? OR 2ND OR 2 ND OR  
 DOUBLE? OR TWO OR NEXT) (3A) STRUCTUR?  
 L38 1 SEA SPE=ON ABB=ON PLU=ON L35 AND L36 AND L37  
 L39 2 SEA SPE=ON ABB=ON PLU=ON L35 AND (L36 OR L37)  
 L40 31 SEA SPE=ON ABB=ON PLU=ON L31 OR L32 OR L38 OR L39  
 L41 1 SEA SPE=ON ABB=ON PLU=ON L40 AND ALICYCLIC?  
 L42 31 SEA SPE=ON ABB=ON PLU=ON L40 OR L41  
  
 FILE 'WPIX' ENTERED AT 15:55:48 ON 12 JUL 2011  
 L43 1 SEA SPE=ON ABB=ON PLU=ON US20070140901/PN  
 L44 1674 SEA SPE=ON ABB=ON PLU=ON L11(L) L23  
 L45 105 SEA SPE=ON ABB=ON PLU=ON L44 AND B05D00017/IPC  
 L46 4 SEA SPE=ON ABB=ON PLU=ON L45 AND SURFACE MODIF?  
 L47 1 SEA SPE=ON ABB=ON PLU=ON L45 AND L36 AND L37  
 L48 1 SEA SPE=ON ABB=ON PLU=ON L45 AND L13  
 L49 66 SEA SPE=ON ABB=ON PLU=ON L45 AND L17  
 L50 1 SEA SPE=ON ABB=ON PLU=ON L49 AND ALICYCLIC?  
 L51 1 SEA SPE=ON ABB=ON PLU=ON L45 AND ANCHOR? (5A) SURFACE?  
 L52 5 SEA SPE=ON ABB=ON PLU=ON L45 AND ANCHOR?  
 L53 1 SEA SPE=ON ABB=ON PLU=ON L45 AND POLYMORPHIC?  
 L54 1 SEA SPE=ON ABB=ON PLU=ON L45 AND (POLYMORPHIC? OR POLY  
 MORPHIC?)  
 L55 9 SEA SPE=ON ABB=ON PLU=ON (L46 OR L47 OR L48) OR (L50 OR  
 L51 OR L52 OR L53 OR L54)  
 L56 38 SEA SPE=ON ABB=ON PLU=ON L44 AND L36  
 L57 26 SEA SPE=ON ABB=ON PLU=ON L44 AND L37  
 L58 52 SEA SPE=ON ABB=ON PLU=ON (L56 OR L57)  
 L59 5 SEA SPE=ON ABB=ON PLU=ON L58 AND SURFAC? (3A) MODIF?  
 L60 4 SEA SPE=ON ABB=ON PLU=ON L58 AND B05D00017/IPC  
 L61 0 SEA SPE=ON ABB=ON PLU=ON L58 AND ALICYCLIC?  
 L62 17 SEA SPE=ON ABB=ON PLU=ON L55 OR L59 OR L60 OR L61  
 L63 13 SEA SPE=ON ABB=ON PLU=ON L62 AND (PRY<=2006 OR PY<=2006  
 OR AY<=2006)  
  
 FILE 'JAPIO' ENTERED AT 16:04:08 ON 12 JUL 2011  
 L64 53 SEA SPE=ON ABB=ON PLU=ON L11(5A) L23  
 L65 9 SEA SPE=ON ABB=ON PLU=ON L64 AND L17  
 L66 0 SEA SPE=ON ABB=ON PLU=ON L64 AND (L36 OR L37)  
 L67 0 SEA SPE=ON ABB=ON PLU=ON L64 AND ANCHOR? (5A) SURFACE?  
 L68 11 SEA SPE=ON ABB=ON PLU=ON L64 AND L22  
 L69 0 SEA SPE=ON ABB=ON PLU=ON L64 AND L13  
 L70 17 SEA SPE=ON ABB=ON PLU=ON (L65 OR L66 OR L67 OR L68 OR  
 L69)  
 L71 12 SEA SPE=ON ABB=ON PLU=ON L70 AND (PRY<=2006 OR PY<=2006  
 OR AY<=2006)  
  
 FILE 'PASCAL' ENTERED AT 16:06:39 ON 12 JUL 2011  
 L72 966 SEA SPE=ON ABB=ON PLU=ON (L65 OR L66 OR L67 OR L68 OR  
 L69)  
 L73 25 SEA SPE=ON ABB=ON PLU=ON L72 AND L13  
 L74 0 SEA SPE=ON ABB=ON PLU=ON L73 AND (L36 OR L37)  
 L75 2 SEA SPE=ON ABB=ON PLU=ON L73 AND SURFAC? (3A) MODIF?  
 L76 7 SEA SPE=ON ABB=ON PLU=ON L73 AND L22  
 L77 9 SEA SPE=ON ABB=ON PLU=ON L73 AND L17  
 L78 0 SEA SPE=ON ABB=ON PLU=ON L73 AND ALICYCLIC?  
 L79 15 SEA SPE=ON ABB=ON PLU=ON (L74 OR L75 OR L76 OR L77 OR  
 L78)

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L80          10 SEA SPE=ON  ABB=ON  PLU=ON  L79 AND PY<=2006

      FILE 'COMPEDEX' ENTERED AT 16:08:56 ON 12 JUL 2011
L81          31 SEA SPE=ON  ABB=ON  PLU=ON  L79 AND PY<=2006
L82          2  SEA SPE=ON  ABB=ON  PLU=ON  L81 AND SURFAC?(3A) (MODIF? OR
      ANCHOR?)
L83          16 SEA SPE=ON  ABB=ON  PLU=ON  L81 AND L17
L84          1  SEA SPE=ON  ABB=ON  PLU=ON  L83 AND (LITHOG? OR PRING? OR
      PHOTOG?)
L85          3  SEA SPE=ON  ABB=ON  PLU=ON  L82 OR L84

      FILE 'HCAPLUS, WPIX, JAPIO, PASCAL, COMPEDEX' ENTERED AT 16:15:37 ON
      12 JUL 2011
L86          66 DUP REM L42 L63 L71 L80 L85 (3 DUPLICATES REMOVED)

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